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J O U R N A L

OF THE

✓

ASIATIC SOCIETY OF BENGAL,

EDITED BY

THE SECRETARIES.

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VOL. XXXII.

Nos. I. to IV. and a Supplementary No.—1863.

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“It will flourish, if naturalists, chemists, antiquaries, philologists, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish if such communications shall be long intermittent: and it will die away, if they shall entirely cease.”

SIR WM. JONES.

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CALCUTTA :

PRINTED BY C. B. LEWIS, BAPTIST MISSION PRESS.

1864.



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Nº 1.



Nº 6





N°12



N°11

SCULPTURE FROM MANDAPAM  
16th-17th century  
Marble

Height 1.15

# JOURNAL OF THE ASIATIC SOCIETY.

No. I. 1863.

*On the Antiquities of the Peshawur District.—By the Rev. I. LOEWENTHAL.*

Saint-Martin, in his Mémoire Analytique sur la Carte de l' Asie, in endeavouring to identify Hiouen-Thsang's Ou-to-kia-han-t'cha, not with Atok, but with Húnd, mistaking the pronunciation of the latter name, complains in reference to Yusufzai and the region about Peshawur that *Malheureusement nous sommes ici sur un terrain dont l'exploration archéologique est à peine entamée.* And it is too true. Whilst the Mahomedans of Northern Africa and of Western Asia not only do not prevent the enterprising Englishman from digging up their graves, but lend even a helping hand in the work, the most interesting localities in the immediate neighbourhood of British territory are utterly forbidden ground to any adventurous archeologist, on account of the unmanageable nature of the independent frontier tribes. And yet, few regions, out of the realm of soil made memorable by either classical or religious associations, would yield a richer harvest of the materials with which to eke out the records of history, than the plains and the hills now almost or altogether within sight of British cantonments. Few even of the scores of mounds\* which cover the plain of Yusufzai, have as yet been in any

\* Since writing the above I have received an interesting communication from Major Burroughs, H. M. 93rd Highlanders, in reference to the mounds which are such a feature of the Yusufzai plain,—an extract from which may perhaps not be unacceptable. In speaking of the Broughs or Paecht's Houses in Orkney, he says :

“ These ‘ Broughs’ are to all outward appearance mere mounds of earth like the tumuli scattered over the plains of the Panjab and throughout the valley of Peshawur, excepting that in the valley of Peshawur they appear always to be

way investigated, much less opened; and still fewer have been the attempts to search the hills which abut on this plain, although every attempt in this direction has been abundantly rewarded. Some of these latter, indeed, require description even more than search, as the remains of buildings on them alone are most remarkable. A late visit to three of these localities, induces me to say a few words, by no means by way of description in the least degree exhaustive, but rather by way of direction for any one with more leisure, and with more previous acquaintance with Indian, Buddhist, and Bactrian antiquities, than I have, to do these interesting subjects justice.

The hill of Takhti Bai, or *Bahai*, as it is called by the natives, has been frequently mentioned, and must have been described before this. It is an isolated, barren hill of no great height, about eight miles west of Fort Hoti Mardán in Yusufzai. It forms, irregularly, three sides of a square, with the open side towards the North-west. The inner slopes of this hill are covered with the still standing shells of lofty buildings, constructed of hewn stones; most of them are of at least two stories, the openings for the beams of the upper floor

covered with bits of broken pottery, which I have not noticed elsewhere." [This opinion that *all* the mounds are covered with broken pottery, though very general, is not correct: many are.] "I have come across these same tumuli in the Orkney Islands (in the north of Scotland), about Stonehenge on Salisbury Plain in England, on and about the battle-field of the Alma, on the Plateau of Sebastopol and about Kertch and Yenikale in the Crimea; and here again on the plains of the Punjab and in the valley of Peshawur. To all outward appearance, they are alike. On the Plateau north of the Alma, these tumuli were generally in great circles with intervals between each tumulus of about half a mile. At nearly every point along the ridge of the Plateau of Sebastopol overlooking the Tchernaya, where the French, Turks and British had thrown up batteries, was a tumulus to be found. The white telegraph tower on the battle field of the Alma, captured by the Zouaves was built on an old tumulus. The tumuli on the plain between Peshawur and Hoti Mardan are also dotted in circles. At Stennis in Orkney and at Stonehenge in England a druidical circle of standing stones is to be seen in the centre of the great circle of tumuli." [There is such a circle of standing stones also at Shewa in Yusufzai, to which the people there attach very superstitious notions. The Khan of the place told me that he had frequently placed men to count the stones, but the stones kept increasing and decreasing in number the whole time that they were being counted, and the same number would not come out twice. There is a single stone of the same nature, with a broken one at a little distance from it, some miles to the south of Shewa, in the midst of the Mera (or desert) near a mound.] "I was at the opening of a tumulus, on my own property in the Island of Ronsay in Orkney, which was in shape like a bee-hive under ground. A large stone covered the opening and over the stone was some two or three feet of earth. It was about twelve feet high from the floor inside to the aperture. There was an aperture below leading to some underground passages. It was close to the seashore and was called by the people a 'Paecht's House.'"

and the windows remaining to attest the fact. They were constructed with much care, the walls being smooth and straight, showing signs also of having been stuccoed or at least plastered. The buildings are of various sizes ; the steps leading to the upper story being either outside the building, or attached inside closely to the outer wall, the vacant space under the staircase being generally fitted up as a cell. The stone of which these buildings were constructed is found on the spot ; the blocks are well hewn and carefully fitted. The centre of all these structures is formed by a quadrangle consisting of cells closely resembling in structure the altar in figure No. 10 ; that is, they consist of a square base, open in front, of little more than a man's height ; this surmounted by a coping, which in shape is the lower part of a paraboloidal vault ; and a short cylinder connects this coping with a hemispherical cupola which is open at the top. (Single cells, or perhaps altars, of this kind, though much larger in size, are found in various spots all over the hill.) One side of the quadrangle has an opening as a doorway to which steps led from an enclosure round the quadrangle. Its centre is occupied by the ruins of a raised platform, whose sides were adorned with figures in stucco or stone. Close to this quadrangle there is what may readily be considered a vaulted subterranean passage, though from the fact that the debris everywhere conceal the original level, there is great uncertainty as to its real depth below the original level of the ground. It may have been a bauli. There is no water on the hill now anywhere ; the Pushto word *Bahai* means a bauli ; yet there is a possibility that *Bahai*, the name of this hill, may be connected with the old *Vihara*.

Another most interesting hill showing many remains of Buddhist times, which I ascended, is on the Buner frontier, the nearest British village being that of Bábúzai. It is very much higher than the hill of Bahai. The ascent from the East, from the Sudum valley, is said to be easy and readily performed by mules ; that from the other side I must call toilsome and steep, for the most part, differing in this respect very much from the ascent of Bahai, which is easy, along a well-trodden path which exhibits in several places very distinct traces of steps cut in the rock, for great distances. A portion of the way up, however, led along the channel of a mountain stream, then dry (April 25th,) whose banks—if banks can be spoken of where rocks

and large boulders conceal both the banks and the torrent's bed—were covered with an impermeable thicket of a magnificent flora; trees blazing with an indescribable profusion of gorgeous blossoms; scrubbery bending under the weight of fragrant flowers of the most pleasing colours; palm trees waving over head; with sequestered cave-like nooks, partly artificial, constructed over cool springs, traces of terraces, remains of tanks and water-courses,—all spoke of men of taste as well as enterprise, who had chosen and beautified this spot as their abode. There are a few caves scattered over the side of the mountain, but the most remarkable of all is a large cave near the summit, which was pointed out by General Court, many years ago, in the eighth volume of the Journal, when on p. 312 he wrote as follows:

“The cave Cashmeer Ghar, situated in the territory of the Baboozeis, on a mountain which cannot be ascended but by a steep passage, hewn in a great measure out of the rock. This place is also called Pelley, and is sixteen koss from the town of Soukhor. The cave is said to be of an immeasurable depth, and to have ~~so~~ large an aperture that it is impossible to discern the direction by casting in a stone. As both sides of the entrance are of solid masonry, and the front is encumbered with enormous cut stones, one would imagine that it is one of the subterraneous temples attributed to the Pandoovans, or to the Caffres. At present it is a place of shelter for myriads of wood-pigeons. Quite close to it are visible the traces of a town or castle whence idols are sometimes dug up; a basin also is observable there, continually supplied with water. I had been assured that an inscription was discoverable, but my men could trace none whatever.”

I transfer the passage in order to correct a few of the statements, as General Court was entirely dependant on information derived from natives. The cave is not hewn out of the rock, but is almost altogether natural. The place is not called Pelley. He must have confounded it with a place of that name, some miles to the north of Bábúzai, not within British territory, which I was told by the Afghans is remarkable for extensive ruins and mounds. What General Court calls Soukhor, is undoubtedly an error of type or a mistake of the pen for Lund-Khor; but this town is hardly more than *ten* miles to the west of Bábúzai. How the name *Kashmírí Ghár* or *Kashmírí Smuss* (both *ghár* and *smuss* being Pushto for cave) originated, is perhaps hard to tell. The idea of the natives is, that the extent of

the cave cannot be measured, but that the opening at the other end of it is in Kashmir. The last portion of the ascent to the mouth of the cave itself is extremely difficult. The cave consists of several chambers of unequal size; the outer one, which is very lofty, is distinguished only by a very few stalactites. The interior contains flights of almost uncountable steps, and buildings, whose nature cannot, however, be fully ascertained without some excavation. But such a work presents here unusual difficulty, not only on account of the comparative inaccessibility of the place, and its distance from the nearest village at which labourers could be obtained, but also because pigeons' and bats' excrements have accumulated in the cave for centuries. Two inscriptions were spoken of by the natives as existing somewhere in the cave, but I did not see them. Indeed, the only inscription which I have seen anywhere during this tour, is on an unshapen piece of rock lying at the entrance of the village of *Zeda*, in the south-eastern corner of the Yusufzai plain. The character is Bactrian; as well as I was able to see, the stone lying under a great heap of manure, upside down, and with the inscribed surface towards a wall. I was not able, during the day that I was at *Zeda*, to obtain a facsimile or even a copy of it. On various terraces and natural plateaus below the Kashmírí Smuss there are numerous remains of buildings very much like those at Bahai as well as like those on a hill near *Naográm*, between the British frontier and the Indus.

One of the most marked features among the remains on this latter hill (it is about 1000 feet high) are very large rocks and boulders scattered about, which have been carefully excavated for cells; many of these are quite plain inside, whilst others have the simple ornament of a niche or two. The summit of the hill offers a flat plateau of some size, which had been very strongly fortified by buildings all round the brow. These buildings are constructed of large blocks of stone (conglomerate, found on the spot) neatly hewn and carefully fitted, disposed with very great regularity and laid in a cement of extraordinary excellence; unavoidable interstices between the large blocks are filled up by layers of thin small stone tablets; this latter practice being an invariable feature in all the so-called Kafir buildings which I have seen in the Trans-Indus country. To judge from the smooth turf and the vegetation in the middle of the plateau, it

is highly probable that the space in the middle was not built upon except one spot very nearly in the centre, where there seems to have been a shrine or an altar.

One of the best preserved buildings at a corner of this plateau still exhibits some chambers which convey a good idea of the internal structure of these ancient remains. A gateway with a pointed arch leads into a long chamber whose ceiling is formed by a prolongation of the arch of the gateway. The arch would be pointed, but the centre line is taken up by a narrow rectangular groove. This circumstance leads to the supposition, that the arch is not a true arch, but is formed by the stones being disposed on one another in the form of steps, whose lower corners were eventually cut away. There is another chamber, accessible from the long passage through a low opening, but it is quite dark, and to a great extent filled with rubbish; whether it was left dark intentionally, or whether superincumbent ruins are closing up what may have been an opening, I could not ascertain without digging. A similar passage and chamber (or rather two chambers opposite each other) are also found on Bahai. On the plateau are found multitudes of figures in fragments, many of them, perhaps most, being the figure of Buddh (Sakyā Muni) with his smooth, placid face, in his simple robe with ample picturesque drapery, elongated ear-lappets, and a halo round his head. The figures are either standing, or sitting cross-legged, with the bare soles of the feet turned upwards; the hands are frequently crossed over the breast, so however that the tips of the fingers of the left hand enter the hollow of the right; sometimes the hands rest in the lap; sometimes the right hand is lifted up as if in the act of blessing.

These figures are of dark blue or greenish slate of great brittleness, though not friable; they are of all sizes up to colossal. Then there are multitudes of haut-reliefs, but few of any good degree of preservation. The vegetation on the hill is principally olive and myrtle. At the foot of this hill to the north there begins a series of low mounds extending far into the interior. A very few of these in the immediate vicinity of the frontier have been partly excavated through Captain Shortt, Assistant Commissioner, and sculptured remains from these mounds are now in Hoti Mardán, and in the museum at Peshawur. A few of these have been photographed by two officers, and I enclose copies of them.

No. 1. A slab 13·14 inches in width, and 8 $\frac{1}{2}$  inches high, considerably abraded, representing a domestic scene. The execution is unusually coarse. The first and third figures from the right are evidently females; they have shoes on their feet, whilst the figure between them with the right hand lifted up, has the feet bare. The first, second, and third figures on the right have all earrings; the sitting female has a chádar over her head. The first and second figures on the right are seated on a bolstered couch, each having a footstool. The seated male figure has an ornamented head-dress, a necklace, and another ornament going over the left and under the right shoulder. The standing female figure has what appears to be a towel in her hands, which may be connected with the nude child on the knees of the next sitting bearded figure, the upper part of whose body is also nude: he appears seated on a mora. The next is also a male figure, but much mutilated. The ornamental architecture forming the ceiling of the room, cannot fail to strike the beholder.

No. 2. The figure of a king—four feet five inches in height.

Hindu dress; tilak on the forehead, smooth chin, neat moustache, elaborate earrings. The head is covered with strings of pearls and precious stones, presenting in front the shape of a diadem or crown, whilst the two ends of a fillet appear on the circular plane behind the head. Four different strings of ornaments, such as are still worn by Hindus, are suspended from his neck. A very rich necklace, encircling the neck, is of precisely the shape and workmanship which belongs to those one sees now worn by the higher officers at the Court of the Maharajah of Kashmir. A longer string lies over the necklace, and is fastened, over the breast-bone, by a richly worked clasp consisting of two open-mouthed animal's heads. Two other strings with amulets come from under the necklace, the one thrown over, the other under the right shoulder. The figure has also amulets on both arms, and two bangles on the wrist of the left hand. The right hand is broken off at a place where most of the figures found have the hand, which is made of another piece, joined to the arm; usually where there is a joint of this kind, it is very skilfully and artistically managed. The dhoti and chadar fall in rich and graceful folds, the latter ending in an elaborate tassel. There are sandals on the feet held by a string. The pedestal presents an altar or large urn in the centre, with two human figures on each side,

those on the right and one on the left in the attitude of supplication, whilst the remaining one on the left appears to bring an offering. Squat square pilasters form the two ends of the representation.

There are many other figures of this kind, of greatly varying sizes which have been found near Naogram as well as near Tahkal.

No. 3. A slab 20 inches in width, 13 inches high.

The execution is better than that of No. 1, and only the figures at the ends are slightly mutilated. The centre figure is a colossal Buddh in the usual unadorned dress, his waving hair gathered in a top knot, the lobes of the ears much elongated, a halo round the head, and feet bare. The left hand, as is usual, holds a part of the robe in a knot; the right hand appears to be taking a snake out of a bush of gigantic flowers growing out of a piece of water. Facing the Buddh is a figure whose dress is very similar to that of the statue No. 2, his hands folded, in the attitude of supplication. The figure between these two, under a tree, has the right hand raised very much in the manner of a modern military salute. The figure close to the left hand of the centre figure is one which occurs frequently in the Naogram haut-reliefs: an aged bearded soldier, nude to the waist, hair *au naturel*, a short broad sword by his side, his right holding an axe; the handle of the latter is gone, as about half of the pedestal of the slab is broken off.

No. 4. A slab 19 inches in width, 12 high.

A Buddh sitting cross-legged on a bolstered pedestal, his right hand lifted up as if in the act of blessing or teaching, a heavy festoon of flowers surrounding the halo. Seven male figures on his right, and six female figures on his left fill up the rest of the slab. Of the male figures three have their hands folded, as in the attitude of supplication; two others of the lower line appear to bring presents. The long waving hair of the two figures nearest to the right hand of Buddh is noteworthy. Of the male figures two have moustaches, the farthest in the lower line, and the nearest in the upper. Of the female figures two have anklets, all have bracelets; the nearest figure in the lower line appears to bring a present, whose nature it is difficult to determine. The execution is not neat, and the hands and feet appear disproportionately large.

No. 5. A slab 14 inches wide, 9 high.

In the centre is a bearded figure, nude as far as visible, a Brah-

minical string (apparently) over the left shoulder. The figure appears standing behind a table with carved legs, the carving on the two legs which are visible not being precisely alike ; in front appears the drapery of a table cloth ; on the table are five round objects, the bearded figure seeming to hold a sixth of the same description. In front of the table there is a small object on a pedestal, which closely resembles what appears from other sculptures to be a fire-altar ; the upper portion of the top forms a cover, which hangs by a hinge from the side of the vase-like lower portion of the top, from which a flame seems to issue. The figure on the right hand of the central figure is dressed in an ample-sleeved shirt, which is confined round the loins by a girdle with a clasp in front ; trousers, shoes, and a turban with pendant end complete the dress of this figure, a dress, moreover, which may be seen, at the present day, worn by the hillmen one meets with in Kashmir. A palm tree is visible behind this figure. The figure on the opposite side is dressed in the usual ample Asiatic robe and sheet, the feet bare : the left hand bears an undistinguishable object. The two figures in the background have lost their faces. The figure in the frame stands on a vase-like pedestal and has the hands folded. This slab, taken in connection with other sculptures, belonging to the same building doubtless, offers a curious combination of the elements of various religions : the tilak, the brahminical thread, and the fire-altar, together with that ubiquitous Buddh !

No. 6. A panel filling up a pointed arch ; width at the base 26 inches, greatest height 25 inches.

Three subjects divided by ornamental lines, the outer one bordered by a palm trunk.

The lowest represents Buddh sitting on a bolstered pedestal, which latter is ornamented by a wheel ; palm leaves over his head. Four male figures on each side in the attitude of eager listeners ; three of these on the one side, and two on the other have their heads and faces shaven smooth ; their ears are natural, that is, the lappet is not extended by any ornament ; the figure nearest to Buddh's uplifted right hand, represents an old man with a long beard.

The scene above this, shows Buddh standing in the centre ; what appears to be a king kneeling before him on his right knee, with hands joined in the position of a suppliant. Five figures behind the king, dressed in a similar way, also appear as suppliants, the last

reclining on one knee. The other side shows six figures ; of the first the head alone comes out distinctly and bears a close resemblance to that of Buddh ; an armed man lightly clad is the next figure ; a shaven figure in simple dress the next ; this is followed by three figures with ample hair and locks, dressed like the figures on the opposite side, the last again reclining on one leg.

The centre of the scene at the top is filled by a large urn on an ornamental pedestal and under a canopy. This appears to be worshipped by the figures on both sides, the last of which, on each side, surpasses Horace's imagination, since the upper part is a nude human figure, and the lower what may be called the coils of a dragon with dragon's wing and horse's foot, ending in a gigantic leaf by way of tail !

There are two more figures with hands joined near the bottom of the slab, supported by Corinthian capitals : these figures, much alike in dress, ornament, and attitude, as they are, differ as to their head-dress, the one on the right having flowing hair and a halo, and the other what appears to be a carefully twisted turban, and no halo.

No. 7. A slab being a piece of one side of a square pillar ; it is 30 inches long ; width 13 inches at the base, 11 at the top. Five compartments, three with Buddh sitting, two with Buddh standing ; the halo is distinct in all but the topmost one. Of the four figures beside Buddh in the lowest, two appear in the attitude of supplicants ; whilst the other two are bringing presents apparently. In the next above, one of the shaven figures reappears ; the figure next to this is too much mutilated to be recognized, and so is the object held in the right hand of the figure facing Buddh. In the third compartment the figures approaching Buddh appear to bring presents as in slab No. 4. In the second compartment from the top the figures are much mutilated ; so they are in the topmost one, but it can easily be distinguished that the two figures nearest Buddh offer presents which are carried by their followers.

The two ends of each of these five compartments are formed by pilasters with nude children in different postures. The sides of the slab itself (the slab being about two inches thick) continue the same pilaster-ornament.

No. 8. A figure of Buddh, 19 inches in height what there is of it, as the feet are wanting. The right hand having been joined on to

the arm, has been lost. Multitudes of these figures, in sizes varying from the neatest miniature of a few inches, to colossal figures 9 or 10 feet in height, are found everywhere.

No. 9, is the slab roughly described in my previous communication. It is 22 inches long, and  $11\frac{1}{2}$  in width.

No. 10. A slab representing a sacrifice, apparently. It is 11 inches high, and 10 wide. The slab is broken in two in the centre. A carefully executed scene of much interest. The building on the left is precisely like a good number of well preserved ones at Bahai. It is represented (as those in reality are) as built of hewn stones, with a low entrance in front. In Bahai this lowest part of the building is usually square, as Rémusat describes the stupa from the Fa houa wen kiu ; but in this haut-relief it appears with rounded corners. The rest of the representation does not differ from the rest of the same kind of building in the ruins. A narrow, slightly sloping, rounded half-dome surmounts the base, itself surmounted by a short cylinder ; on the top of this is a eupola with a small knob for its apex. In the buildings of this sort on Bahai the knob is wanting, and an opening appears in its place. In this representation a fire is perceived to be burning inside the building, as flames issue at every opening, and the figures about it, six in number, appear all engaged in pouring oil on the fire. The lowest figure on the left, with its back to the spectator, and a curly head of hair, is dressed only in a dhoti and is lifting a jar from the ground. Half the jar is broken off. To the left above is a similar figure on a ladder with a jar inverted in his hands, as if in the act of pouring out the contents on the roof. On the opposite side, an old, bearded, faqír-like looking man, his hair dressed precisely as the Sikhs dress theirs at the present day, clothed in a shirt, and carrying a crooked pole in his left hand, is pouring, with his right, the contents of a bottle on the lower roof. Next to this figure is a man of smaller stature, otherwise very like the last, with a smaller bottle in his left hand. Behind the latter faqír is a stout, curly-headed figure, dressed in a dhoti, standing on a ladder, in the act of taking a large jar from another figure, who is carrying it on his left shoulder, and holding it with his right hand passed over his head.

No. 11, the figure of a king sitting was excavated by Lieut. Johnstone from a mound near Lower Tahkál, a village between the Peshaw-

wur cantonment and the Khyber Pass. The statuc, as it may be called, is 44 inches high, and 23 wide across the knees.

The figure is considerably mutilated, the entire right side above the knee of the principal figure, and the heads of three of the small ones being wanting; but what makes the figure remarkable is the suggestion, which one is struck with on looking at it, of its being probably a portrait. Many other figures with precisely similar dress and ornaments have been found in most of the places where figures have been found at all; but all the others present a smooth handsome face of great regularity of features, without much expression, as if the artists had only intended to produce some ideal or conventional head. The face of this figure, however, is far from being handsome or regular; there is a sternness in its mouth and chin, and a certain fierceness in its prominent eyes; the natural fall of the heavy moustache also contrasts strongly with the waxed little ornament of the upper lip found in the other figures of this kind. The whole head is covered by a richly wrought combination of strings of pearls with variously shaped and sized representations of precious stones; a lion's head over a heavy pearl garland surmounts the left temple. The lobes of the ears are much elongated by heavy pearl earrings. One lock of hair is visible behind the right ear. A necklace, and another ornament falling over the left shoulder relieve the nude thorax. A thick festoon of flowers seems, from its large curve, to be hanging over both shoulders and down in front. The legs are covered by a dhoti, and an izáband is visible in the middle. The bangled left hand (rudely worked) holds a heavy javelin to which a bell is tied. The left foot rests upon a footstool.

The four small figures are enigmatical from being so much mutilated. The figure sitting on the same couch with the king near his left knee is very coarse. It is quite nude, but has a fillet, a necklace and anklets: it leans forward, with its hands upon its breast. The standing figure below is headless; its breast and shoulders are covered with scale-armour: a short petticoat goes from the loins to the knees, and greaves cover the unmutilated legs; as there are no toes visible, the feet, in the intention of the artist, are represented as covered by shoes. The right hand bears a bunch of the same flowers of which the thick festoon is composed. The left hand carries something indistinguishable. The upper figure on the right of the king is also nude; the lower covered by a dhoti kneels on its right knee.

No. 12. A slab found near Jamrúd, the dismantled fort at the mouth of the Khyber. It is 24 inches in height, and 18 wide.

Harem scenes. In the lower compartment, a male figure in the usual dress of Buddh and with a halo round his head is seen sitting on a couch, his left foot supported by a footstool. Behind him lies a female sleeping. Behind the sleeping figure another female figure is visible. The central figure seems to be about taking something from the hand of the figure on his right. Below are two women reclining on what appear to be drums. A lattice forms the upper ornament of the chamber, and above the lattice appear four human heads and the head of an ox; two of the human heads have halos, and the other two have the same kind of cap or turban with which the female figures below appear to be covered. Pillars separate the centre apartment from two arched passages or gateways at the sides; over each arch appear two birds. In each of the gateways there are two women, possibly as sentries, one of them holding a spear.

The upper compartment has suffered much from mutilation. The principal figure, apparently the same as the central figure in the lower compartment, is seen reclining on a couch, his face directed towards a woman sitting on the same couch, her feet supported by a footstool. The woman sitting on the ground appears to be beating two drums with her hands. The female figure behind is holding aloft a round object in her right hand, which may also be a musical instrument. Outside the pillars supporting the arch of the centre apartment appear three women on each side. One on the left is entirely peeled off; another, standing, appears to be playing a wind-instrument; the action of the sitting one is indistinguishable. The sitting female on the right appears playing a stringed instrument; the action of the other two cannot well be made out.

Before concluding this communication, I shall venture, though with much diffidence, to say a word on one of the most vexed questions among all the perplexing ones referring to the ancient history of the regions near the Indus, and that is, the identification of *Aornos*, the height which it cost Alexander so much trouble to take. It may seem presumption to renew the discussion of this subject after the full treatment it has received in this Journal (Vol. XXIII. *Gradus ad Aornon*) in Colonel Abbott's able and elaborate article. And yet, few attentive readers of that article can be satisfied with

the conclusion ; indeed, there is sufficient evidence that the writer himself was not satisfied with the conclusion, and that he gets rather out of patience, and that justly, with his authorities, Arrian and Curtius. Without absolute violence, it is quite impossible to reconcile their discrepant statements ; and not only are their statements utterly discordant as to the locality, but the most discordant points are found in one and the same writer.

As to the general locality in which Aornos is to be sought, most investigators, as indeed Col. Abbott himself, have found Arrian so vague here, that they have held to the more graphic representations of the imaginative Curtius. Yet no writer can be more inaccurate. His best friends have never been able to defend him from the charge of romancing. His own ideas, too, in reference to geography and topography seem so confused, that what little value may be accorded to his narratives, the want of proper and true localization deprives them of all value as portions of history. Only a few paragraphs before this chapter about Aornos, he speaks of Alexander's taking *Mara-canda*, which, from all attending circumstances, must be *Samarkand*, and in the very next breath he speaks of the Scythians of the Tanaïs (the Don) as in the same neighbourhood. In this very narrative about Aornos, which he places on the Indus, he makes Alexander fight for the place as only a very important place such as commanded a ford or passage, could induce him to fight, and then, he makes Alexander march sixteen more marches in order to cross the Indus.

The topographical indications, therefore, of the ancient writers, it must be confessed, have hitherto led to no satisfactory result in the search after the famous Aornos. May not another method of identification prove more successful ? The name Aornos can hardly be an invention of the Greeks. If the difficulties of Chinese transcription of Indian names have been so successfully overcome, may not a similar linguistic method have equally happy results, if applied to those names in Alexander's march, which have not been satisfactorily identified yet ?

What appears most probable in reference to the disputed locality, is this : that the place was on or near the Indus, that it was a height near plains, that the people of the plains considered it an impregnable place of refuge, that Alexander thought it of sufficient importance to make a very signal effort for its capture, and that its name was *Aornos*. To begin with the name.

*Aornos* must be the Greek transcription of a Sanscrit name, for all the other names which have been identified, have been identified through the Sanscrit, which therefore, whether the people then spoke it or not, was certainly the language of their names, and not only then, but for some centuries subsequent yet. In course of time the Sanscrit was worn down into Hindi, Panjabi, Pushto, etc. Hence if we wish to see how any place bearing a certain Hindi, Panjabi, Pushto or other name at the present day, came to be called so-and-so by the Greeks, we can only find it by referring the modern name back to its most probable Sanscrit predecessor or progenitor. Thus, the modern Behat was called Bidaspes or Hydaspes by the Greeks, because Behat is the modern short for the ancient Vitasta.

Now we find in the *Tabaqáte Akbari*, in the *Taríkhe Murassa*,\* in other native works, and even from the mouth of Hindus at the present day, that the place now called *Atok* was formerly called *Atok Benares* (properly *Banáras*). The union of two names in this way may be explained in one of two ways. Either we believe, on the analogy of *Kasi Benares* as explained by Dr. Hall in No. 1 of last year's Journal, p. 5, that Benares was the name of the "circumjacent territory" of *Atok*; or else, we adopt an analogy more in accordance with the custom along and near the Indus. We find, in this region, that when a locality is designated by two names mentioned together, it is either because there are two places bearing these names respectively close to each other, as *Hoti Mardán*, *Tárú Jabba*; or else, where there is a river, because they are on the opposite banks of the river, as *Rorí Bakar*, *Thút Naka*, *Dágkí Bánḍa*, etc. etc. The latter analogy is evidently the aptest in the present instance; hence we conclude that in former days, there was a locality opposite *Atok*, that is, on the right bank of the river Indus, named *Benares*. The old form of *Benares* is, as is well known, *Varanas* (or *Varanasi*). How would a Greek of Alexander's age pronounce this name? He would, in the first place, prefix a vowel. Why? we can hardly tell without a discussion much too long for the present object. It will suffice to know that he was in the habit of doing so. The Sanscrit *danta* he pronounced *δδόντα*; *nakha*—*Ṅννχα*; *nama* (n)—*Ṅνομα*; *bhrú*—*Ṅφρν*; *nri*—*Ṅνήρ*; *s'atam*—*Ṅκατόν*; *mih*—*Ṅμιχέω*, and a hundred like instances which will readily occur to the reader. We

\* A History of the Afghans, by Afzul Khan Khatak.

should then have the form *avaranas*. One of the commonest modes in which the Sanscrit syllable *ra* reappears in other languages, is in the form of the vowel *o*. Thus

Sanscrit *dvár* = English *door*, German *thor*.

„ *vakshas* = „, *ox*.

„ *svan* = Latin *son*—.

„ *svasar* = „, *soror*.

„ *svar* = „, *sol*.

„ *svarna* = Hindi *sona*.

In Greek some such change is doubly necessary on account of the absence of the sound *v* from the language (from the *κουνη*, at any rate); hence *svas* corresponds to *ōs*, *s* being replaced by the breathing; *vák*, becomes *ōπ-*, etc. Then there is that immense class of perfect participles, which in Sanscrit are formed with the suffix *vát*,\* corresponding to the Greek form in *ότ-*, and many other instances. On this principle *avaranas* becomes *ἀօπρος*, losing one vowel necessarily by the recession of the accent.

We should therefore have to look for Aornos opposite Atok. With reference to this locality General Court has observed "that a rock exists opposite Atok, with all the peculiarities described by Q. Curtius, on a mountain that is topped by a castle, attributed to Rajah Hody. It cannot be ascended but on the side of the Indus, by a steep passage hewn through the rock, and enclosed by two walls of defence, running up zigzag according to the protuberances of the mount. The space inclosed by these walls is filled with ruins of habitations gradually rising from the brink of the river up to the castle. Those works are all entire, and have the appearance of great antiquity."

Much of this is true even now, though it is highly probable that many of the "habitations," of which General Court speaks, as well as the "castle" itself, have been removed to build Sikh Forts in the same locality, since he saw the place, if he saw it at all himself. There are ruins of buildings, but they are few. However, the outer wall of the whole Fort is distinctly traceable. It runs down to the river on two sides; the space enclosed is at least three times as large as the Fort Atok, and the wall to the west, north, and south evidently overhung steep places. The walls are smooth and even, and in general appearance allied to the Buddhist remains in Yusufzai.

[\* As in *dadri'svát*—and *τετνφότ*.—EDS.]

I may add the opinion of one of the highest military authorities that Mahabun, which Col. Abbott proposed as Aornos, commands nothing ; it is so much out of the way that it would hardly ever have been a place of refuge for the people of the plains ; and if it had been, a general like Alexander would not have wasted his time and his men on the reduction of an isolated hill which was by no means impeding his passage of the Indus. On the other hand he says that the hill above Khairábád is not only a most conspicuous point for friend and foe, but also one that must be taken before a passage of the Indus at Atok would be attempted by an invading force.

I have only one item to add in reference to the tradition about Rajah Hody. This tradition still exists on the spot, and in other localities of Afghanistan. The topes and altars, for instance, in the neighbourhood of Amerakhel near the Surkhab, are attributed by the natives to Rajah Hody or Udi. Now *Saint-Martin* in the treatise cited above, finds three regions conterminous with one another, which, in Hiouen-Thsang's time, were called *Oudyana*, according to his French spelling : the first as the capital of Ningrahar (p. 52) ; the second, the kingdom of Oudyana, (p. 63), which he identifies as the plains and hills of Ashnaghār (Hashtnagar, though inveterate and official, is incorrect) and Yusufzai ; and the third time he finds the name, it is applied to the region about Hasan Abdál, (p. 69). In each of these instances he says, the locality was called so, that is "a garden," on account of its fertility. It does not strike him as strange that precisely the same name should have been given to *three* adjoining regions, and these names should be entirely independent of one another. Moreover, Ningrahar is by no means a garden at all times. It is a locality which suffers famine frequently, and one of the derivations of its name as given by indigenous Mullahs, is based on the meaning "half-hungry,"—a derivation however little worth in etymology it may be, gives evidence at least of the native estimation of the fertility of the place. The plain of Yusufzai is a garden about once in three or four years ; the rest of the time it is a desert.

It appears to me far more likely that these regions together were called by the *one* name *Udiana*, as being the kingdom of this "Rajah Udi." Names of this form and thus derived are frequent in the

Panjab, for instance, Lodian, Luliana, Duliana, Gurjiana, Hariana, Phubiana. Whether Udi, or Hody was an individual as Guru ji (of Gurjiana) or some Hari Singh (of Hariana) may have been, or a dynasty or family, as that of the Lodi (of Lodian), I am unable to say. What I propose, I do not presume to dogmatize on. And I do not think that the name *Udiana* itself has entirely disappeared, as Saint-Martin supposes, but that it has probably been preserved in *Adina*, the name of a large village situated almost in the centre of the Yusufzais.

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#### LITERARY INTELLIGENCE, CORRESPONDENCE, &c.

Professor Whitney writes from New Haven, U. S. A., December 30th, 1862.

"Our own labours are going on much as usual, at a moderate rate, owing to the absence of an abundance of resources, whether material or literary. I trust that you have not failed duly to receive all that we have forwarded to you, viz., the numbers of the Journal and extra copies of those of its articles of which separate editions have been issued. The forthcoming half volume is mainly occupied with my Atharva-Veda Prâtis'âkhyâ, which fills nearly 300 pages. Unfortunately the MS. material furnished for it was of the scantiest: it may be hoped that a second copy of the work will turn up some time in India. It may be that I shall go on to publish in a somewhat similar style the Tâittirîya Prâtis'âkhyâ, for which Professor Hall some time ago furnished me a fair supply of material. Our friend just mentioned, has written me that you informed him when he saw you on his return to India that you had access to a couple of copies of the Gopatha Brâhmaña, and that you offered to procure to be made for me a transcript of the work from them. It would indeed be a great kindness to me if you would do so. I should also like much to know which of the more ancient Siddhântas (besides those already in print) you have in manuscript at Calcutta: I mean to resume by and by my studies in the Hindu astronomy, begun in connection with the translation, &c., of the Sûrya-Siddhânta given in volume VI. of our Journal."

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Colonel Cunningham writes to E. C. Bayley, Esq., in a letter dated Camp *Gonda*, 20th February, 1863.

“ I have been most fortunate this season in my identifications of the ancient sites. The fact is, that I have had time to read and compare the authorities beforehand, and so I was able to make up my mind as to where to look for most of the places. I marked them down like quail, and then marched up and bagged them. *Ahichhatra* is a valuable discovery, as the place was of great consequence in the early days of Indian history. It is the *Adisaradha* of Ptolemy, and was the capital of northern Panchala. I intend to finish the excavation of its large Tope during next month.

In the Khalsi inscription of Piyadasi the letter “r” is not used, hence the name of Alexander is written as *Alikyasadale*—at least so I read the name, for it contains a curious compound letter  $\ddot{t}$  which I take to be *ky*. The inscription in this portion is certainly different from those of Dhauli and Kapurdigiri and Gujrat. The names of the subject countries follow immediately after those of the Greek Kings—commencing with *Choda Pandiya* (not *Pida* as hitherto given). On the opposite side of the rock, there is an elephant boldly cut in outline, and between his legs the short inscription *Gajatame*, which may perhaps be “The Black Elephant,” in contradistinction to the *Sweta hasti* of the Gujrat inscription.

At Kosam there is an immense ancient fortress with a stone pillar of the same dimensions as those of Delhi and Allahabad, but it bears no ancient inscription that I could find, although I dug to a depth of upwards of seven feet all round it. There is however a record of Akbar’s time, in which a pilgrim calls the place *Kosambi-pura*. That Kosambi was on the Jumna see the legend of Bakkula who was dropped by his mother into the *Jumna* at *Kosambi*, and was floated down the stream to Benares.

Hwen Thsang’s *Kia-she-pu-lo* is Sultānpur of which the old Hindu name was *Kusabhavanapura*, or simply *Kusapura*.

Hwen Thsang’s *Pi-so-kia* or *Visākha* is the same as Fa Hian’s *Sha-chi*, and also the same as the *Sāket* of the Pali annals. It was no doubt called *Visākha*, after the celebrated lady *Visākhā* who was a native of *Sāket*; and I presume that her name was held in estimation for centuries afterwards, as I refer the coins of *Visākha Deva* and *Dhana Deva* to princes of Ajudhia who were named after the

original Buddhist lady Visâkhâ and her father Dhananja. Sâket was *Ajudhia*, I have already come upon sprigs of the toothpick tree which Buddha planted at Sâket. Both are called *Datton*.

*Srâvasti*, or *Sâvatthi*, or *Sâwet* or *Sewet* I expect to find at Sahêt-Mahet, where I shall arrive on the 23rd. According to the Purâñas Srâvasti was in *Gaura*—and this is *Gaura* where I am now writing! Our military spelling is only equalled by our military pronunciation. There is no such place as *Gonda*—all the people of the country call it *Gaura*—and the old name of *Balrâmpur* was *Râmgârh Gauri*. These identifications render the whole of Hwen Thsang's route clear and satisfactory—and in Fa Hian's route we have only to read twenty *yojans*, instead of ten *yojans*, from the *Holi* forest near Kanoj to *Sha-chi* to make his account tally with the other. The Singhalese annals give twenty *yojans* from Kanoj to Sewet. Nothing can be more complete."

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL,  
FOR JANUARY, 1863.

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The Annual General Meeting of the Asiatic Society was held on the 15th instant.

A. Grote, Esq., President, in the chair.

The Secretary read the following Annual Report for 1862:—

ANNUAL REPORT.

The Council of the Asiatic Society, in submitting their annual report for the past year, have the satisfaction of again congratulating the Society on its increasing prosperity both in respect to the increase of members and the improvement of its finances.

During the year 1862, there has been an accession to the Society of 44 members, while the loss by death and retirement, amounts to 12. The number of ordinary members at the close of the year was 311 against 281 of the preceding year. Of the ordinary members on the roll, 82, or more than one-fourth are absent from India, leaving 115 Resident and 114 Non-Resident members on the paying list.

Annexed is a tabular statement shewing the fluctuation in the

Ordinary.	Paying.	Absent.	number of the ordinary members during the last ten years.
1853	146	123	23
1854	155	129	26
1855	162	128	34
1856	167	131	36
1857	147	109	38
1858	133	193	38
1859	180	135	45
1860	242	195	47
1861	281	226	55
1862	311	229*	82

Of the deceased members, Bábú Ramá-prasád Roy had been for some time a member of the Council, and a Vice-President, and was distinguished for the interest which he took in the prosperity of the Society. Dr. Crozier had been for three years a member of the Council. The other names in the obituary are the Hon'ble W. Ritehie, Rajah Prosunno Nath Roy, E. A. Blundell, Esq., Bábú Jogindra Náráin Roy, and T. E. B. Judge, Esq.

\* Of this number, one has compounded for his subscription.

## FINANCES.

The Gross Receipts of the Society during the year amounted to

1852 .....	6,373	1	3
1853 .....	7,778	9	3
1854 .....	7,082	0	0
1855 .....	7,166	0	0
1856 .....	8,096	0	0
1857 .....	7,068	0	0
1858 .....	6,923	8	0
1859 .....	6,750	0	0
1860 .....	6,141	0	0
1861 .....	6,812	0	0
 Total Rs.	<u>70,490</u>	<u>2</u>	<u>6</u>

The average of which is  
Rs. 7,049-0-3 per year.

Rupees 15,631-5-6, and its Expenses to Rupees 15,979-13-5. The receipts on account of Contributions from members were Rs. 8,822-9, of which Rupees 1,600 were for Admission fees and the balance, Rupees, 7,222-9 for quarterly subscriptions. The latter sum is considerably in excess of what was collected during the last year, as well as of the average collections of the previous ten years, as will be apparent from the table annexed in the margin.

The Liabilities of the Society amount to Rs. 4,274-0-2 chiefly due to printing charges, while the Assets amount to Rupees 7,113-1-9 exclusive of outstanding balances to the extent of Rupees 5,719-11-2, the greater portion of which is for unrealized subscriptions in course of collection. A large sum under this head, Rupees 1,381-2-7 has been written off to profit and loss as un-realizable.

The income of the Society has received a permanent addition since April last of Rupees 200 per mensem granted by Government for the support of the Natural History museum.

The probable income and expenditure of the Society for the next year may be set down as follows:—

## Income.

Contributions,	...	...	Rs. 8,000	0	0
Admission fees,	...	...	...	800	0
Journal, ...	...	...	...	728	0
Library, ...	...	...	...	500	0
Museum, ...	...	...	...	6,000	0
Secretary's Office,	...	...	...	11	0
Vested Fund,	...	...	...	245	0
Coin Fund, ...	...	...	...	45	0
 Rs....	<u>16,329</u>	<u>0</u>	<u>0</u>		

Expenses.						
Journal,	...	...	...	2,500	0	0
Library,	...	...	...	2,046	0	0
Museum,	...	...	...	7,120	0	0
Secretary's Office,	...	...	...	1,855	0	0
Building,	...	...	...	389	0	0
Vested Fund,	...	...	...	7	0	0
Coin Fund, ...	...	...	...	357	0	0
Miscellaneous,	...	...	...	487	0	0
				Rs....	14,761	0
						0

#### LIBRARY.

Important additions have been made to the library during the past year, amounting to 550 vols., more than half of which were presentations from various British and Continental Societies, and from distinguished individuals with whom the Society is in correspondence.

Several interesting scientific books were likewise purchased at the sale of the late Dr. Walker's valuable library, among which may be noticed a splendid set of the *Description de l'Egypte* published by order of the Imperial Government of France.

A catalogue of the inscriptions published in the Researches as well as in the vols. of the Journal subsequent to Vol. XXIII. has been prepared by the Librarian. To this has been annexed, by way of appendix, a short catalogue of inscriptions presented by the late Major Markham Kittoe, but not yet published.

#### COINS.

The Numismatic cabinet has received some valuable additions chiefly through the kind exertions of Captain F. W. Stubbs. Mr. Bayley was for some time engaged in effecting a systematic arrangement of the coins, but the press of official duties, the Council regret to observe, has prevented his making any great progress in the undertaking.

#### MUSEUM.

The Museum has been enriched by a number of valuable contributions, during the year under review.

The Archæological department of the Society has received several

figures and plinths of pillars in red sandstone exhumed from a tope in the neighbourhood of Muttra, some of them containing inscriptions bearing the name of Huvishka, under whose auspices it is believed the *vihar* or monastery of which they are but fragments, was raised. They attest to a period when Buddhism prevailed throughout India.

The Council, acting upon a proposal by the President for pushing forward Ethnological researches have commenced a collection of crania of the races inhabiting India, and the neighbouring countries. A series of photographs prepared under the orders of the Bengal Government has also been received, which, together with the facial casts now in the Museum, will yield most useful materials for future reference by ethnologists.

At the suggestion of the Committee of Meteorological and Physical science, the Council have addressed a letter to Government recommending that a Meteorological Committee should be constituted by Government on the plan of the Meteorological Committee of the Board of Trade in London, for the advancement of Meteorological science, by which means, it is hoped, that much practical benefit would be conferred upon the mercantile world. No answer to this letter has yet been received.

They regret to notice that the Right Hon'ble the Secretary of State has declined to comply with their recommendation that the Zoological catalogues of the India House Museum which were in course of preparation should not be discontinued.

The catalogue of mammalia in the Society's collections, the Council are glad to report, has at length been completed and is now in the press.

The subject of the foundation of a Public museum in Calcutta which the Society first proposed in 1857, the Council are glad to report, was taken up by Government in May last with a view to its practical realization. In the letter received from Government, an outline of the measures which it was proposed should be adopted, was submitted for the consideration of the Society.

The Council in reply to this important communication have forwarded a scheme which in its essential features is in consonance with the views propounded by Government, but at the same time they have distinctly reserved to the Society full power of dealing with the details of the scheme before they are finally settled.

Public interest is still		increasingly attracted by the museum as
NATIVES.		will be manifest from the annexed memo-
Male, .....	84,885	randum which shows an average of 258
Female, .....	5,754	visitors per diem.
EUROPEANS.		
Male, .....	2,746	
Female, .....	1,003	
		94,388
Average being 258 per day.		

#### OFFICERS.

The Council have learnt with extreme regret that the Society's solicitation for a reconsideration of the decision by which their curator, Mr. Blyth's application for pension was held by the Home Authorities to be inadmissible, though warmly supported by the Governor General in Council, has not met with the success they had anticipated. The pension solicited has been again refused by the Right Hon'ble the Secretary of State for India.

The continued indisposition of Mr. Blyth, which indicated a constitution broken down by protracted residence in this country, has obliged the Council to grant him leave of absence for a year, on full pay, in order to enable him to proceed to Europe for the benefit of his health.

In Mr. Blyth's absence, the selection of a competent man to replace the late Bábú Rajkisto Banerjea, who had been for some months employed as an Honorary Assistant Curator, and who had in that capacity proved himself extremely useful, is a task of much importance and considerable difficulty.

The Assistant Secretary and Librarian continues to discharge his duties to the entire satisfaction of the Council.

#### JOURNAL.

Four Numbers of the Journal have been published this year and a fifth is in the press. They contain several very important papers relating to the history, the antiquities and the natural history of this country.

#### BIBLIOTHECA INDICA.

The Bibliotheca Indica has been continued during the past year with the same vigour on the part of its different editors as in the previous year. Thirteen numbers have appeared of the old series and seventeen of the new.

In the new series, Dr. Hall has published the second part of the

Das'a Rúpa, a third will complete the work, which will be accompanied by an appendix containing those parts of Bharata's Nátya S'ástra which go over the same ground. Pandit Prem Chandra Tarkabágísh has published two fasciculi of his edition of the Kávyádars'a of S'rí Dañdin; the Rev. K. M. Banerjea two fasciculi of the Náradá Pancha Rátra, and Mr. Cowell the first part of the Maitri Upanishad. There have also appeared two fasciculi of translations,—the second part (concluding the work,) of that of the Siddhánta S'íromani, by the late Lancelot Wilkinson, Esq., revised by Pandit Bápu Deva, and the first part of Dr. Ballantyne's translation of the Sánkhya Aphorisms.

In the series of Muhammadan historians of India, we have to announce the completion of the Tárikh-i Ferozsháhi of Ziá-i Barní, and the Tárikh-i Masaudi of Baihaki.

In Arabic, Captain Lees has published the Nokhbat al Fíkr wa Nozhat al Nazr, complete in one fasciculus.

In the old series, we have to announce the completion of three of our old publications, viz., the Dictionary of Technical Terms used in the science of the Musulmans, and the Pseudo-Wakidy's Conquest of Syria, both edited by Captain Lees, and the Márkandeya Purána, edited by the Rev. K. M. Banerjea. The Council refer with pleasure to the remark in the last report of the Asiatic Society of Paris, relative to the first of these works,—*ce dictionnaire sera une des publications les plus utiles de la Société.*

Bábú Rájendralál Mitra has issued five numbers of the Taittiríya Bráhmaṇa, of which the third volume is now commenced.

Mr. Cowell has published two parts of the Taittiríya Sanhitá and Pandit Rám Náráyan Vidyáratna three of the Vedánta Aphorisms.

The titles of the fasciculi of the old series published during the year are,—

1. The Dictionary of Technical Terms used in the Sciences of the Musulmáns, P. II. edited by Mawlavies Abdul Haqq and Gholám Kádir, under the supervision of Captain Lees, LL. D., No. 182, Fasc. XX.
2. Márkandeya Purána, edited by the Rev. K. M. Banerjea, No. 183, Fasc. VII.
3. Aphorisms of the Vedánta, edited by Pandit Rám Náráyan Vidyáratna, Nos. 184, 186 and 194, Fasc. VI. VII. and VIII.

4. *Taittiríya Sanhitá*, edited by E. B. Cowell, M. A., Nos. 185 and 193, Fasc. XVI. and XVII.

5. *Taittiríya Bráhmaṇa*, edited by Bábú Rájendralál Mitra, Nos. 188, 189, 190, 191, 192, Fasc. XII. XIII. XIV. XV. XVI.

6. The Conquest of Syria commonly ascribed to Aboo Abdallah Muhammad bin Omar al Waqidi, edited by Captain W. N. Lees, LL. D., No. 187, Fasc. IX.

The titles of the Fasiculi of the new series are,—

1. *Tarikh i Baihaki*, edited by the late W. H. Morley, Esquire, published under the superintendence of Captain W. N. Lees, LL. D., Nos. 21, 22, 26, 27, 29, 31, 36, Fasc. III. IV. V. VI. VII. VIII. IX.

2. *Tarikh i Ferozshahi of Zia-i Barní*, edited by Saiyid Ahmed Khan, under the superintendence of Capt. W. N. Lees, LL. D., No. 23. Fasc. VII.

3. *Das'a Rúpa*, by Dhananjaya, edited by Dr. F. E. Hall, No. 24, Fasc. II.

4. *Náradá Pancha Rátra*, edited by the Rev. K. M. Banerjea, Nos. 25, 34, Fasc. II. III.

5. Hindu Astronomy, II. The *Siddhánta S'íromani*, translated by the late Lancelot Wilkinson, Esq., C. S. and revised by Pandit Bápu Deva Sástri, under the superintendence of the Ven'ble Archdeacon Pratt, No. 28, Fasc. II.

6. *Kávyádars'a* of S'rí Dañdin, edited by Pandit Prem Chandra Tarkabágísh, Nos. 30, 33, Fasc. I. II.

7. The Sánkhya Aphorisms of Kapila, translated by Dr. J. R. Ballantyne, No. 32, Fasc. I.

8. The Maitri Upanishad, edited by E. B. Cowell, M. A. No. 35, Fasc. I.

9. The *Nokhbat al Fikr wa Nozhat al Nazr*, edited by Capt. Lees, and Mawlawies Abdul Haqq and Gholám Kádir, No. 37 complete in one Fasiculus.

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The President then read the following address:—

The report which you have just heard, and which will I hope be adopted as satisfactory for the present state of the Society's affairs and as hopeful for the future, touches on one or two points which seem to me to claim special attention. With the meeting's permis-

sion I will, as I did at our last annual meeting, remark briefly on these while reviewing the record of our proceedings during the past year.

Two, perhaps, of the most interesting papers which have been contributed were those read by Major Walker and Major Montgomerie at our February and April meetings. Both supplied valuable geographical information on countries within and across our frontier,—information which was likely to fall within the reach only of officers employed, as they were, on the survey of our Indian Empire. Those of us who attended the April meeting and saw the photographic sketch of the large Baltoro and neighbouring glaciers that Captain Montgomerie then exhibited, must all feel equally eager for further communications from the officers engaged on the Kashmir series of that great survey.

One suggestion which on that occasion fell from Captain Montgomerie and which Major Walker is, I am aware, now discussing with the Government, I especially commend to the consideration and warm support of our Society. The field of Captain Montgomerie's duties brings him in contract with traders and travellers who pass without question beyond our frontier and who visit without risk those cities of Turkistan to which an European cannot safely penetrate. Why should we not, asks Captain Montgomerie, do our best to turn the services of such men to account? Some few among them he already knows to be partially competent and to admit of being made more so, and by cautious training on our part the ranks of such men may be increased. I have lately heard further from Captain Montgomerie on this important subject, and have laid his letter before the Council, which will deal with it at their next meeting.

Later in the year another communication was read by Major Walker, who, on that occasion, acknowledged the obligations of the Trigonometrical Survey to the investigations of Archdeacon Pratt. The result of those investigations, which have extended over some years, and the value of which has been more fully recognised in Europe than in this country, has been condensed by the Archdeacon in a memo. which was published in the 2nd No. of our Journal, and was concisely announced by him in the remarks which he made at our meeting on Major Walker's paper. It was to the effect that "the distances between places determined by the Survey are free from the effects of errors caused by local attraction;" a result which

leaves the survey maps as reliable as they were before the liability to error was first pointed out, and in fact as reliable as in the present state of science maps admit of being made.

Major Walker has also commenced the publication in our Journal of a series of papers bearing on the great work of which he now stands at the head, and I must again express my hope that every year may see our Society more closely connected with the officers of this and of the Geological Survey. To Mr. W. Blanford of the latter of these surveys we owe our first knowledge of the character and probable age of the volcanic peak of Puppa Doung beyond our Pegu frontier. Mr. Blanford's paper on this volcano, Major Sherwill's account of his and Dr. Simpson's attempt to reach Kinchinjinga, Captain Raverty's account of the upper and lower Swat, and the report by Captain Fraser and Captain Forlong of their expedition across the Isthmus of Krau, have given what I may call a geographical colour to the contents of our Journal for the past year which has doubtless made the issues acceptable to many.

To those of us too who took an interest in the projected expedition of Captain Smyth into Chinese Tartary, and who felt for him in the disappointment which he and his intended companions experienced when Government was obliged for the time to abandon it, it must have been gratifying to hear the assurance of H. M.'s minister at Pekin, which was announced at our August meeting, that he was alive to the importance of the objects of that expedition, and would lose no opportunity which might offer of promoting them. Those of us, moreover, who joined the deputation to Lord Elgin on his arrival in India, are aware that he is as anxious as ourselves and as the enterprising men who were to have crossed the snows, to see all barriers removed to a free intercourse between this country and China. One of these barriers, and a most important one will, it is hoped, disappear under the late treaty with Burmah, and other difficulties may be removed by the joint British and Burman expedition, which it has been proposed to send *via* Bhamo to the Yunan frontier.

I may take this opportunity of announcing that I lately handed in to Government an application from Captain Smyth and Dr. Stewart for a year's leave to admit of their attempting to reach Lhassa on their own resources, and I am in hopes that should the difficulty in obtaining passports from Pekin not be obviated, their application

may hereafter be complied with. The state of the border countries is at present somewhat disturbed, and I understand that the Governor-General thinks that it would be better, at all events, to defer giving the leave till a more favorable opportunity offers.

At our March meeting was read the correspondence which had been sent to us by the Government of India regarding the appointment of Colonel Cunningham as Archæological Surveyor, and which enclosed a memorable Minute by the late Governor-General. It must have been cheering indeed to the few among us who have persevered, in spite of every difficulty, in the study of mouldy coins and in the decipherment of imperfect inscriptions, to find the head of the Government acknowledging its past neglect of the services which they have rendered to the 'early history of England's great dependency,' and declaring its intention to neglect this duty no more. As bearing on those pursuits of our Society in which it was so deeply occupied a quarter of a century ago, and which earned for it the high compliment which was paid to it by Professor Lassen in the dedication of his great work on Indian archæology, I regard this declaration as the most important communication which has been made to us since my connexion with the Society. One of its results we may expect every day to see in Colonel Cunningham's first yearly report, and the grant which has recently been made by the North-Western Government towards pushing the excavations at Muttra, is probably another.

More than one paper which has appeared in our Journal during the last year will be read with interest by European scholars who have not, like ourselves, access to those remains of which we are the custodians. But more especially will they hail the proofs of continued activity on the part of their learned co-labourers in this country which are given in the long list of additions made during the year to both series, old and new, of our *Bibliotheca Indica*.

With no pretensions myself to being a scholar, I can well appreciate the importance attached at home to the labours of the Philological Committee of our Council, and the heartiness of the welcome with which European Orientalists must receive each printed text of a MS. rescued from possible oblivion. The thirty-two Fasciculi of different works, which the report mentions as having been published during the year at the charge of the Oriental Fund represent portions of works, which have hitherto been accessible in MS.

only in three or four public libraries—but which our publications enable students to carry to their own homes for the extraction and elaboration of such materials as are useful to them each in his own branch of study.

The series of Persian historians is one, in the progress of which I take a special interest, an interest borrowed from others, but not the less genuine for not being original. The late Sir H. Elliot and Mr. John Colvin, were the first movers, as is generally known, on behalf of the publication in question, which the active co-operation of Mr. E. Thomas had just pressed into a project when the troubles of 1857 caused all idea of it to be dropped. It was resumed some three years ago by the Philological Committee at the suggestion, I believe, of myself, since I, as your Secretary, had been all along in close communication with those friends whom I have just named. The first work, *Taríkh-i Ferozshahi* of *Ziá-i Barní*, which the Committee undertook to recommend to the Council, was that which was to have opened the series under the auspices of the North-Western Government. I indulge in the hope that much may yet be done towards carrying out not only thus partially, but in its entirety, the task to which Sir H. Elliot had devoted himself, and which was occupying him when he died. The mass of valuable materials which he had collected, ought not to be allowed to remain longer inaccessible to the many who desire to consult and profit by them.

In the department of the natural sciences, the principal contribution to the pages of our Journal is Mr. Blyth's paper on the Asiatic species of Rhinoceros. Whether the views enunciated in this paper will find acquiescence from other naturalists, remains to be seen, but he has quite satisfied himself that the Soonderbun Rhinoceros is identical with the species of Java and Borneo.

The Messrs. Blanford still continue their contributions to Indian malacology. Several interesting letters and reports on zoological subjects have been published in the intelligence department and proceedings of each issue of our Journal. In the latter too will be found the Council's correspondence with the Government—so far as it has gone—on the proposed transfer of the Society's Museum.

In connexion with the Museum, I must express a regret which will be shared by many, at the causes which have deprived us for the time of the services of our zealous Curator. The Council, as you will be pre-

sently informed, took upon itself the responsibility of anticipating the assent of a general meeting to Mr. Blyth's departure to England. None hope more earnestly than myself that the voyage and consequent change may completely restore his health, and none can have read perhaps with greater disappointment than I have the unfavourable reply lately received to the despatch of the Supreme Government which was read to us at our July meeting and in which Mr. Blyth's claims, "as a man of science," were strongly and ably advocated. This reply has yet to be considered by the Council and communicated to the meeting, and I bespeak for the whole subject when it is laid before you, an especial consideration.

I have nothing more to add, but shall at once ask the meeting to adopt formally the Council's report.

Mr. Lewis Jackson seconded the motion.

Mr. Oldham moved as an amendment that the Report be adopted with the exception of the paragraph reporting the leave of absence granted by the Council to Mr. Blyth.

Mr. Oldham argued that the Council had contravened the rules by the course it had pursued in this matter.

After some discussion a show of hands was taken when the amendment was rejected and the Report of the Council was adopted.

Mr. Oldham then handed in the following protest:—

"I protest formally against the illegality and informality of the adoption of that portion of the report of the Council which refers to the absence of Mr. Blyth, inasmuch as in direct contravention of the rules of the Society this resolution of Council which was passed prior to the December meeting of the Society was not reported to that meeting."

The meeting then proceeded to ballot for the Council and officers for the ensuing year.

Mr. E. C. Bayley, and Captain H. Hyde, were appointed scrutineers, and at the close of the ballot, the chairman announced the following result:—

#### COUNCIL.

Lieutenant-Colonel H. L. Thuillier, *President.*

A. Grote, Esq.,

Lieutenant-Colonel R. Strachey, } *Vice-Presidents.*  
Bábú Rájendra Lál Mitra,

Hon'ble C. J. Erskine.

Dr. J. Fayrer.

Captain W. N. Lees.

E. C. Bayley, Esq.

Dr. T. Anderson.

Bábú Ramánáth Tágore.

J. Obbard, Esq.

Dr. T. C. Jerdon.

T. Oldham, Esq.

W. S. Atkinson, Esq. }  
E. B. Cowell, Esq. } *Joint Secretaries.*

Lieutenant-Colonel Thuillier, on assuming the President's chair said he felt deeply the great honor that had been done him by the vote of the meeting, for which he expressed his warmest acknowledgments. Of the honorable members present none could have been taken more by surprise than he himself was, when he was first nominated by the Council, at which time he felt it his duty to urge as forcibly as he was able, the various good reasons against his being selected to fill such a post, for which he feared he possessed but very few qualifications. There were, he knew, other members of the Society who could and would render far better service than he ever could hope to do, and it was a matter of regret, therefore, that some one of greater influence and ability had not been selected on the present occasion.

It was to be borne in mind that the cause of the vacancy in the Presidentship of the Society was the retirement of their respected and excellent friend Mr. Grote in consequence of a desire having been expressed by some members for a periodical change in the tenure of the office in accordance with the practice of learned Societies in Europe. In the desirability of introducing this principle into the Asiatic Society he fully concurred, and he would have been glad to see it carried out during the present year under ordinary circumstances, but when he reflected on the great difficulty there appeared to be in securing the services of a suitable person to fill the office, and when no better man than himself had been elected by the votes of the meeting, he submitted that at such a moment it was not good to introduce the change, and he heartily wished that their late President could have been prevailed on under such circumstances to forego his determination to

retire, and to consent to serve for another year, but as such had not unfortunately been the case, he (Lieutenant-Colonel Thuillier) had reluctantly yielded to the wish of those who had so kindly proposed, and voted for him.

For himself he would beg to assure the Society that, deeply sensible as he was of his own shortcomings and unfitness for such a post, he could only endeavour by every means in his power to make up by perseverance and zeal, what he lacked in other respects, and he trusted with the co-operation and support of the Council, that when he laid down the tenure of his office at the end of the year, it might be found that the interests of the Society had not materially suffered. The meeting might depend on his using every exertion to maintain the prosperity and name of the Society.

It was now his duty to remind the meeting of the valuable services they had lost by the retirement of their late President, and to propose for their acceptance a resolution expressive of their regret at his cessation and hearty thanks for the constant attention and devotion to the interests and business of the Society which Mr. Grote had, for the past four years rendered with so much advantage and, he believed, credit to the Society. Mr. Grote's services both in and out of that chair were well known to them all, but more particularly to the Council who had better opportunities of becoming acquainted with all he did here, as well as in his correspondence with scientific men and Societies in Europe, in the furtherance of the objects and interests of the Society. He was sure they all appreciated the good services of their late President, and he therefore had great pleasure in proposing a resolution embodying this feeling for record in their proceedings. It was a matter of congratulation that they were still to retain Mr. Grote as a Vice-President of the Society.

Colonel Thuillier then proposed the following resolution:—

That this meeting desire to record their deep sense of the valuable and unwearied services of Mr. Grote during the four years that he has served the office of President, and their great regret at his retirement from a post which he had occupied with so much advantage to the Society.

Bábú Rájendra Lál Mitra seconded the motion, which was then put and unanimously adopted.

The meeting then resolved itself into an ordinary general meeting.

The following presentations were announced :—

1. From Dr. Brockhaus, a complete set of *Dic Lieder des Hafis, Persisch mit dem commentare des Sudi.*
2. From Lieutenant E. F. T. Fergusson, Superintendent Government Observatory, Bombay, a copy of the Magnetical and Meteorological Observations in the year 1861.
3. From Mr. John Allan Broun, Director of the Observatories of His Highness, the Rajah of Travancore, copies of his papers on the “Horizontal force of the Earth’s Magnetism,” “the Bifilar Magnetometer” and “the connection between meteorological phenomena and the variations of terrestrial Magnetism.”
4. From the Royal Astronomical Society at Edinburgh, vols. 28, 29 and 30 of the Memoirs of the Society.
5. From the Superintendent of the Geological Survey of India, a copy of the Memoirs of the Geological Survey of India, *Palaeontologia Indica*, Part IV. 2nd series.
6. From Bábú Joygopal Bysack, four copies of a collection of Persian odes written by him under the name of *ଜୀ.*
7. From Lieutenant-Colonel R. C. Tytler, an Andamanese earthen bowl.
8. From Mr. A. L. Agabeg, a box of shells.
9. From Mr. H. Cope, Umritsur, a silver coin from Ladakh.
10. From Bábú Shib Chunder Mullick, a trove of silver coins (of which two were exhibited at the September meeting) found in “Badi Kashee” Grant No. 211, Soonderbuns.

The following is a list of the coins by Mr. Bayley :—

Dated coins of Altumsh,	...	...	3
Ditto      Behram,	...	...	2
Ditto      Reziah,	...	...	2
Ditto      Ghias-uddin,	...	...	4
Ditto      Nasir-uddin,	...	...	3
Local Bengal coins,	...	...	4

Total,      ...      18

The Council reported that they had given Mr. Blyth leave of absence for 12 months on full pay to enable him to proceed to Europe for the recovery of his health, and that they had paid him Rs. 1,000 in advance of his salary to provide for the expenses of his passage.

Mr. Oldham moved that this report be adopted.—*Agreed to.*

The Council also reported that they had appointed Bábú Poorno Chunder Bysack to officiate as curator of the zoological collections on probation on a salary of Rs. 100 per mensem.—*Adopted.*

The following gentlemen proposed at the last meeting were balloted for and duly elected ordinary members:—

F. Fedden, Esq., Geological Survey; Hon'ble J. P. Norman, Hon'ble H. S. Maine, M. S. Howell, Esq., R. A. Sterndale, Esq., and J. Squire, Esq.

Dr. T. Goldstücker, Professor of Sanscrit, London University, proposed by the Council at the last meeting was balloted for and elected a Corresponding Member.

The following gentlemen were named for ballot as ordinary members at the next meeting:—

E. T. Trevor, Esq., C. S. proposed by Mr. Grote, seconded by Mr. Atkinson.

The Hon'ble Rajah Deo Narain Singh, proposed by Captain W. N. Lees, seconded by Mr. Grote.

Communications were received—

1. From Bábú Gopinath Sein, abstracts of the results of the Hourly Meteorological Observations taken at the Surveyor General's Office in October last.

2. From Mr. W. T. Blanford, a paper entitled “Contributions to Indian Malacology, No. IV., Descriptions of new Land Shells from Ava and other parts of Burmah.”

3. From Mr. W. Theobald, Jr., a paper entitled “Notes on the distribution of Indian Terrestrial Gasteropoda, considered with reference to its bearing on the origin of species.”

ABSTRACT STATEMENT  
OF  
RECEIPTS AND DISBURSEMENTS  
OF THE  
ASIATIC SOCIETY,  
FOR  
THE YEAR 1862.

## STATEMENT

*Abstract of the Cash Accounts*

## RECEIPTS.

1862.

1861.

## ADMISSION FEES.

Received from New Members,	... 1,600 0 0	1,600 0 0	1,472 0 0
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## CONTRIBUTIONS.

Received from Members,	... 7,222 9 0	7,222 9 0	6,812 0 0
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## JOURNAL.

Sale proceeds of, and Subscriptions to, the Journal of the Asiatic Society,		... 532 2 0	
Refund of Postage Stamps,		... 5 1 0	
		537 3 0	553 15 0

## LIBRARY.

Sale proceeds of Books,		... 489 0 0	
Refund of Freight, ...		... 32 0 0	
		521 0 0	385 8 0

## MUSEUM.

Received from the General Treasury, ...		... 5,200 0 0	
Savings of wages, ...		... 11 2 3	
		5,211 2 3	3,629 5 0

## SECRETARY'S OFFICE.

Sale of Postage Stamps,		... 2 5 6	
Discount on ditto, ...		... 2 10 6	
Refund of Postage, ...		... 1 3 0	
		6 3 0	11 2 0

## VESTED FUND.

Interest on Government Securities, received from the Bank of Bengal, ...		... 245 0 0	
		245 0 0	245 0 0

## COIN FUND.

Sale proceeds of some gems taken by Mr. Theobald from Chandra Mull's batch of Coins, on account of Capt. Stubbs, ...		... 16 0 0	
		16 0 0	118 11 9

## ESTATE OF MACKINTOSH &amp; Co.

Received from the Assignee office, the 7th, 8th & 9th Dividends on a claim of Sicca Rupees 11,964-6-6,		50 11 9	
		50 11 9	

## DEPOSIT.

E. C. Bayley, Esq. ...	... 13 0 0
W. Theobald, Esq. ...	... 18 0 0
M. Kempson, Esq. ...	... 12 0 0
Carried over,	43 0 0
	15,409 13 0

No. 1.

*of the Asiatic Society for 1862.*

## DISBURSEMENTS.

1862.

1861.

## CONTRIBUTIONS.

Returned to M. P. Edgeworth, Esq.  
for the year 1856 as he had been  
charged in error,

...	64	0	0	—	64	0	0	15	2	6
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## JOURNAL.

Printing Charges, including paper,	1,963	6	0
Freight, ...	118	1	0
Purchasing Postage Stamps,	46	3	0
Ditto Journals,	9	0	0
Packing Charges,	11	8	0
Engraving 4 Copper Plates,	96	0	0
Ditto a Diagram,	2	0	0
Ditto 24 Small Woodcuts,	6	0	0
Drawing and Lithographing 484			
Copies of a Facsimile of an In- scription from Wardak,	7	3	0
Ditto ditto Map of Burmah and Sketches of Buddhist Images, ...	260	0	0
Ditto ditto on Stone 4 Plates of Skulls of Rhinoceros,	80	0	0
Drawing 7 Plates of Tenasserim Coins,	40	0	0
Ditto on Stone and Printing two plates of Celts in Journal No. III. of 1862,	58	8	0
Ditto a map shewing advantages, obtainable by establishing com- munication across Krau,	15	0	0
Ditto Route Survey from the Bay of Bengal to the Gulf of Siam, via the Isthmus of Krau,	10	0	0
Ditto on Stone and Lithographing 500 Copies of a Sanskrit Inscript- tion from Central India,	105	0	0
Lithographing on Transfer Paper facsimile of an Inscription from a Temple in Fort Gwalior,	25	0	0
Ditto and Printing 4 Plates of Naogram Sculptures,	168	8	0
Photographing Rubbing of an Inscription from Pagán,	30	0	0
Printing 1900 Copies of Plates of Rhinoceros' Skulls,	57	0	0
Commission on Sale of Books,	13	10	6

Carried over,	3,121	15	6	—	64	0	0
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## RECEIPTS.

Brought over,	43	0	0	15,409	13	0				
D. F. Macleod, Esq....	...	18	0	0						
Major J. T. Walker,...	...	24	0	0						
J. J. Grey, Esq. ....	...	0	8	0						
The Right Rev. the Lord Bishop of Calcutta, ....	...	36	0	0						
C. B. Saunders, Esq.	...	18	0	0						
Capt. M. Lloyd, ....	...	12	0	0						
E. G. Glazier, Esq. ....	...	12	0	0						
Baboo Nobin Chunder Roy,	...	4	0	0						
Lieut.-Col. J. Abbott,	...	19	7	0						
Naranjee Tricumjee, Esq.	...	1	14	0						
Baboo Brojendra Gopal Chowdry,	...	0	2	0						
C. A. Elliott, Esq. ....	...	2	9	6						
W. T. Dodsworth, Esq.	...	30	0	0						
		—	—	—	221	8	6	698	3	0

## BALANCE OF 1861.

Bank of Bengal,	2,212	10	11				
Cash in hand,	65	15	9				
	—	—	—	2,278	10	8	
Inefficient Balance, ...	...	182	15	0	2,461	9	8

## DISBURSEMENTS.

Brought over,	3,121	15	6	64	0	0
Duty on a parcel of Lithographic Plates,	...	...	3 0 0			
Insufficient Postage, ...	...	...	2 4 0			
Petty Charges, ...	...	...	1 11 6			
				3,128	15	0
					595	6 0

## LIBRARY.

Salary of the Librarian for 12 months at Rs. 70 per month, ...	840	0	0			
Establishment, ...	84	0	0			
Purchase of Books, ...	1,063	4	0			
Book Binding, ...	188	6	0			
Books Cleaning, ...	27	0	0			
Commission on sale of Books, ...	45	7	6			
Printing 96 pages of 200 Copies of Catalogue of Mammalia, ...	192	0	0			
Paid Mr. E. Blyth, in part payment as a remuneration for preparing the Mammalia Catalogue of the Museum, ...	250	0	0			
Landing Charges, ...	1	10	0			
Petty Charges, ...	6	5	9			
				2,698	1	3
					2,108	7 3

## MUSEUM.

Salary of the Curator, E. Blyth, Esq. at Rs. 250 per month, for 12 months, ...	3,000	0	0			
His House-rent at Rs. 80 per month, for 12 months, ...	960	0	0			
Paid Income Tax on Mr. Blyth's Salary from Dec. 1861 to Nov. 1862, ...	120	0	0			
Establishment, ...	642	0	0			
Extra Taxidermists' Salary, ...	682	13	0			
Contingent Charges, ...	467	4	6			
Freight, ...	161	0	0			
Bearing Banghee Charges, ...	6	12	0			
Ticea Carpenter's wages, ...	52	5	6			
Paid Passage money for a Taxidermist accompanying Mr. E. Blyth to Moulmein, ...	81	11	0			
Ditto Carriage hire on 3 Packages of Skins, ...	13	2	0			
Drawing on Transfer Paper Sketch to illustrate the Positions of places where the Goruckpore Aerolites fell, ...	5	0	0			
				6,192	0	0
					6,333	6 3

## SECRETARY'S OFFICE.

General Establishment, ...	774	0	0			
Secretary's Office Establishment, ...	873	0	0			
Purchase of Postage Stamps, ...	60	9	0			
A Sheet Almanac for 1862, ...	1	8	0			
Three Blank Books, ...	11	4	0			

Carried over, 1,720 5 0 12,083 0 3

## RECEIPTS.

Brought over, 18,092 15 2

Carried over, 

---

 18,092 15 2

## DISBURSEMENTS.

	Brought over,	1,720	5	0	12,083	0	3
Printing Charges,	...	120	8	0			
Advertising Charges,	...	1	12	0			
Engraving a Seal for the Lever-							
embossing Press,	...	9	0	0			
Bearing Postage,	...	5	6	0			
Stationery,	...	105	11	0			
Petty Charges,	...	16	9	3			
		1,979	3	3	1,840	11	9

## VESTED FUND.

Paid Commission upon Interest on							
the Government Securities,	...	0	9	2			
Ditto Income Tax on ditto,	...	4	13	0			
		5	6	2	10	3	6

## COIN FUND.

Purchase of Coins,	...	68	0	0			
Ditto of 9 Assorted Gold Mohurs,	...	396	0	0			
Ditto of an Akbar ditto,	...	55	0	0			
A Teakwood Coin Cabinet,	...	35	4	0			
Fitting Pigeon holes in the wooden							
Coin Cabinet,	...	4	0	0			
Banghee Postage,	...	7	8	0			
Bearing ditto,	...	3	12	0			
2 Packets of Large Cards for labell-							
ing Coins,	...	1	8	0			
10 Paper Boxes for Coins,	...	0	10	0			
12 Bags for ditto,	...	0	10	0			
Petty Charges,	...	0	9	6			
		572	13	6	191	8	0

## BUILDING.

Assessment,	...	270	0	0			
Ditto for Lighting,	...	72	0	0			
Repairing,	...	13	0	6			
Metalling the Society's Compound,	...	25	0	0			
		380	0	6	395	2	0

## MISCELLANEOUS.

Advertising Charges,	...	22	14	0			
Meeting Charges,	...	167	5	6			
Wages of a Ticca Mally,	...	54	6	6			
A Bracket for the Clock,	...	6	2	0			
Purchase of Receipt Stamps,	...	7	9	0			
A Tin box for keeping the							
Kittoe Inscriptions,	...	5	4	0			
A Blank Book,	...	2	0	0			
Paid fee to the Bank of Bengal							
for Stamping Cheques,	...	3	2	0			
Petty Charges,	...	33	10	9			
		302	5	9	521	15	0

Carried over, 15,322 13 5

## RECEIPTS.

Brought over, Co.'s Rs. 18,092 15 2

Co.'s Rupees,... 18,092 15 2

Examined.

LALGOPAL DUTT,  
*Assistant Secretary.**Asiatic Society's Rooms,  
The 31st December, 1862.*

## DISBURSEMENTS.

Brought over, 15,322 13 5

## DEPOSIT.

E. Blyth, Esq. ...	360	0	0
Baboo Nobinchunder Roy, ...	0	14	0
E. C. Bayley, Esq. ...	13	0	0
Capt. H. G. Raverty, ...	26	12	0
Capt. E. L. Earle, ...	20	0	0
Major J. T. Walker, ...	24	0	0
Baboo Shumbhoo Chunder Roy, ...	12	0	0
R. H. M. Warrand, Esq. ...	10	0	0
C. J. Campbell, Esq. ...	12	0	0
W. A. D. Anley, Esq. ...	18	0	0
M. Kempson, Esq. ...	12	0	0
W. Theobald, Esq. ...	18	0	0
D. T. Macleod, Esq. ...	18	0	0
W. T. Dodsworth, Esq. ...	18	0	0
The Right Rev. The Lord Bishop of Calcutta, ...	36	0	0
C. B. Saunders, Esq. ...	18	0	0
Capt. M. Lloyd, ...	12	0	0
E. G. Glazier, Esq. ...	12	0	0
Lieut.-Col. J. Abbott, ...	12	0	0
Rev. S. Hislop, ...	4	6	0
	657	0	0
	305	2	0

## BALANCE.

Bank of Bengal, ...	757	8	9
Cash in hand, ...	78	5	6
	835	14	3
Inefficient Balance, ...	1,277	3	6
	2,113	1	9
Co.'s Rs....	18,092	15	2

W. S. ATKINSON,  
*Secretary, Asiatic Society.*



## No. 2.

## Fund for the year 1862.

## DISBURSEMENTS.

1862.

1861.

## ORIENTAL PUBLICATIONS.

Commission on Sale of Books, ..	107	5	9			
Freight, ...	69	3	0			
Packing Charges, ...	21	9	0			
Purchase of Postage Stamps, ...	13	12	0			
Petty Charges, ...	9	2	0			
	220	15	9	175	10	9

## VESTED FUND.

Commission upon Interest on Government Securities, ...	1	1	9			
Income Tax on ditto, ...	8	12	0	9	13	9

## CUSTODY OF ORIENTAL WORKS.

Salary of Librarian at Rs. 30 per month, ...	360	0	0			
Establishment at Rs. 14 per month, ...	168	0	0			
Book Binding, ...	153	8	0			
Books Cleaning, ...	63	0	0			
Extra Writer's Salary, ...	4	0	0			
Banghee Expenses, ...	7	8	0			
Bearing Postage, ...	7	0	0			
Stamp fee paid to the Bank of Bengal, ...	1	9	0			
Packing Charges, ...	0	4	0			
Repairing the Library Cases, ...	4	4	0			
Printing Charges, ...	3	0	0			
Petty Charges, ...	1	0	0			
	773	1	0	864	1	0

## LIBRARY.

Purchase of Books and MSS., ...	114	9	9			
	114	9	9	94	8	0

## DEPOSIT.

Paid Dasia Santgram Swakaram, ...	41	13	0			
	41	13	0			

## DICTIONARY OF TECHNICAL TERMS.

Printing and Editing Charges, ...	484	0	0	1,844	0	0
	484	0	0	1,844	0	0

## TARIKH I FEROZSHAHI.

Printing Charges, ...	100	0	0			
Copying and Examining, ...	0	12	0			

Carried over, 1,745 1 3

## RECEIPTS.

Brought over, 11,064 12 1

Carried over, 11,064 12 1

## DISBURSEMENTS.

		Brought over,	1,745	1	3
MARCANDEYA PURANA.					
Printing Charges, ...	...	277	8	0	
Charges for assistance in Editing, ...		100	0	0	
		<hr/>			
377	8	0	817	8	0
SIDDHANTA SIROMANI TRANSLA-					
TION.					
Printing Charges, ...	...	194	8	0	
Drawing and Engraving 6 Dia-					
grams, ...	...	20	0	0	
		<hr/>			
214	8	0	401	0	0
WHITE YAJUR VEDA,					
Subscription to 20 Copies of Nos.					
6 and 7 of vol. 3rd of ditto					
£21 @ 1-11 $\frac{1}{2}$ per rupee, ...		214	7	6	
		<hr/>			
214	7	6			
CHHANDOGYA UPANISHAD TRANS-					
LATION.					
Printing Charges, ...	...	322	0	0	
Translating ditto, ...	...	183	8	0	
		<hr/>			
505	8	0			
BLACK YAJUR VEDA.					
Editing Charges, ...	...	534	0	0	
		<hr/>			
534	0	0			
KAMANDAKI.					
Editing Charges, ...	...	140	0	0	
		<hr/>			
140	0	0			
NARADA PANCHARATRA.					
Printing Charges, ...	...	462	12	0	
Charges for assistance in Editing, ...		80	0	0	
		<hr/>			
542	12	0	272	8	0
VEDANTA SUTRAS.					
Editing Charges, ...	...	460	0	0	
Printing ditto, ...	...	215	4	0	
		<hr/>			
675	4	0	450	0	0
SA'NKHYA SA'R'A.					
Copying Charges, ...	...	20	0	0	
		<hr/>			
20	0	0			
DASARUPA.					
Printing Charges, ...	...	224	0	0	
		<hr/>			
224	0	0	245	14	0
SANKARA DIGVIJAYA (Prose and Poetry.)					
Printing Charges, ...	...	110	8	0	
Purchase of Paper for ditto, ...		180	0	0	
		<hr/>			
290	8	0			
SANHITA OF THE BLACK YAJUR					
VEDA.					
Printing Charges, ...	...	224	0	0	
		<hr/>			
224	0	0	452	6	0
CONQUEST OF SYRIA.					
Printing Charges, ...	...	384	0	0	
		<hr/>			
384	0	0			
Carried over,		6,091	8	9	

## RECEIPTS.

Brought over, 11,064 12 1

Co.'s Rs.,...	11,064	12	1
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Examined.

LALGOPAL DUTT,  
*Assistant Secretary.*

*Asiatic Society's Rooms,*  
*The 31st December, 1862.*

## DISBURSEMENTS.

Brought over, 6,091 8 9

## KAUSHITAKI BRAHMANA.

Printing Charges, ... 482 14 0  
482 14 0

## NAKHBAT UL FIKR.

Editing and Printing Charges, ... 269 0 0  
269 0 0

## TARIKH I BAIHAKI.

Printing and Editing Charges, ... 2,067 0 0  
2,067 0 0 584 0 0  
8,910 6 9

## BALANCE.

Bank of Bengal, ... 537 4 2  
Cash in hand, ... 2 8 8  
Inefficient Balance, ... 1,614 8 6 2,154 5 4  
Co.'s Rs.... 11,064 12 1W. S. ATKINSON,  
*Secretary, Asiatic Society.*

## STATEMENT, No. 3.

Showing the Assets and Liabilities of the Asiatic Society at the close of 1862.

CASH.	1862.	1861.	1862.	1861.
Bank of Bengal, .....Rs.	757 8 9	2,212 10 11	Hon'ble Sir J. W. Colville, Kt, ... Rs.	276 8 0
Cash in hand, .....	78 5 6	65 15 9	J. W. Laidlay, Esq., .....	418 7 4
Inefficient Balance, .....	1,277 3 6	182 15 0	Deposits, .....	54 2 6
Government Securities, .....	5,000 0 0	5,000 0 0	Messrs. Williams and Norgate, .....	489 10 0
	-----	-----	Salary, Establishment and Contingent	607 2 4
	7,113 1 9	7,461 9 8	Charges for December, say, .....	356 0 0
	-----	-----	Charges for December, say, .....	600 0 0
	-----	-----	Printing Journal, Nos. I. II. & III. of	700 0 0
	1862, .....	1862, .....	1862, .....	1,716 8 0
OUTSTANDINGS.			1,060 8 0	
Contributions, .....Rs.	4,156 10 8	5,041 14 3	Ditto Nos. IV. & V. for which no	
Admission Fees, .....	224 0 0	448 0 0	account has yet been rendered, about,	
Library, Sale of Books, .....	291 8 0	302 8 0	Subscription to the Oriental Translation	
Journal Subscription, .....	483 12 3	509 2 3	Fund, £31-10s, .....	315 0 0
Ditto, Sale of, .....	63 12 3	24 4 0	Bird Catalogue, (Binding), .....	42 4 0
Government Allowance for Dec, 1862,	500 0 0	300 0 0	Bengal Printing Company 200 Copies	42 4 0
	-----	-----	of Mammalia Catalogue in Press, say,	42 4 0
	5,719 11 2	6,625 12 6	250 0 0	0 0 0
	-----	-----	-----	-----
	4,274 0 2	4,209 5 4	-----	-----

Examined

LALGORAL DUTT,  
Assistant Secretary, Asiatic Society.ASIATIC SOCIETY'S ROOMS,  
The 31st Dec., 1862.W. S. ATKINSON,  
Secretary, Asiatic Society.

## STATEMENT, No. 4.

Showing the Assets and Liabilities of the Oriental Publication Fund at the close of 1862.

ASSETS.	1862.	1861.	LIABILITIES.	1862.	1861.
Government Securities, .....	Rs. 9,500	0 0	9,500 0 0	Deposits, .....	Rs. 146 13 0
In the Bank of Bengal, .....	537 4 2		915 7 5	Establishment and Contingencies for	188 10 0
Cash in hand, .....	2 8 8	44 2 5		Dec, 1862, .....	50 0 0
Inefficient Balance, .....	1,614 8 6	2,454 8 6	Editing Charges due for works not yet		50 0 0
Government Allowance for Dec, 1862,	500 0 0	500 0 0	complete, about .....	1,922 8 0	3,000 0 0
Bibliotheca Indica Sale and Subscription,	610 7 9	423 0 0	Printing Charges, say, .....	4,000 0 0	3,261 4 0
	—	—		—	—
12,764 13 1	13,837 2 4			6,119 5 0	6,499 14 0
	—	—		—	—

Examined,

LALGOPAL DUTT,

Assistant Secretary, Asiatic Society.

W. S. ATKINSON,

Secretary, Asiatic Society.

ASIATIC SOCIETY'S ROOMS,

The 31st Dec, 1862.

LIST OF ORDINARY MEMBERS  
OF THE  
ASIATIC SOCIETY OF BENGAL  
ON THE 31ST DECEMBER, 1862.

The \* distinguishes Non-Subscribing and the † Non-Resident Members.

*Date of Election.*

June	2, 1847	†Abbott, Lieut.-Col. J., Artillery, Delhi.
Dec.	5, 1860	Abdool Lutceef, Khan Bahadur, Maulavi, Caleutta.
July	4, 1860	†Ahmed, Sai��d, Khan Bahadur, Ghazipore.
April	2, 1862	Aitchison, C. U., Esquire, B. C. S., Caleutta.
",	4, 1862	*Aitchison, J. E. T., Esquire, M. D., Europe.
Feb.	2, 1859	*Alabaster, C., Esquire, China.
July	7, 1852	*Allen, C., Esquire, B. C. S., Europe.
Oct.	3, 1860	Amir Ali, Khan, Munsh��, Caleutta.
Sept.	4, 1843	*Anderson, Lieut.-Col. W., Bengal Artillery, Europe.
May	1, 1861	Anderson, T., Esquire, M. D., F. L. S., Royal Botanic Garden, Caleutta.
Nov.	7, 1860	†Anley, W. A. D., Esquire, Allahabad.
Oct.	8, 1862	Apurva Krishna, Rajah Bahadur, Caleutta.
",	12, 1859	Archer, Dr. C., Caleutta.
Sept.	4, 1861	Asghur Ali, Khan Bahadur, Nawab, Caleutta.
July	3, 1861	*Asphar, J. J. T. H., Esquire, Europe.
",	4, 1855	Atkinson, W. S., Esquire, M. A., F. L. S., Caleutta.
March	7, 1860	Atkinson, Lieut.-Col. F. D., Caleutta.
Feb.	6, 1861	†Austen, Capt. H. G., H. M.'s 24th Foot, Surv. General's Dept., Dehra Dhoon.
Sept.	6, 1826	Avdall, J., Esquire, Caleutta.
Oct.	7, 1835	*Baker, Col. W. E., Bengal Engineers, Europe.
Nov.	7, 1860	Bancerjea, Rev. K. M., Caleutta.
March	6, 1861	†Barnes, C. H., Esquire, Bh��galpore.
Augt.	6, 1862	†Basevi, Capt. J. P., Bengal Engineers, Vizagapatam.
Jan.	3, 1838	†Batten, J. H., Esquire, B. C. S., Myniporee.
July	4, 1860	†Batten, G. H. M., Esquire, B. C. S., Allahabad.
May	4, 1859	Bayley, E. C., Esquire, B. C. S., Caleutta.
Feb.	6, 1861	Bayley, S. C., Esquire, B. C. S., Caleutta.
June	6, 1849	Beadon, Hon'ble C., B. C. S., Caleutta.
April	7, 1841	Beaufort, F. L., Esquire, B. C. S., Caleutta.
Sept.	4, 1847	*Beavan, Lieut. R. C., late 62nd B. N. I., Europe.
Augt.	4, 1861	*Beckwith, J., Esquire, Europe.

*Date of Election.*

Sept. 1, 1830	*Benson, Lieut.-Col. R., Europe.
Dec. 8, 1862	Bernard, C. E., Esquire, Calcutta.
Augt. 6, 1862	†Beverley, H., Esquire, B. C. S., Monghyr.
June 4, 1862	†Bhau Daji, Dr., Bombay.
July 2, 1862	Bhola Náth Mullick, Bábu, Calcutta.
, 15, 1840	*Birch, Major General Sir R. J. H., K. C. B., Europe.
March 4, 1846	*Blagrave, Major T. C., 26th Regt. B. N. I., Europe.
Sept. 7, 1859	Blane, Lieut.-Col. S. J., Calcutta.
March 4, 1857	Blanford, H. F., Esquire, Calcutta.
Augt. 3, 1859	†Blanford, W. T., Esquire, Geological Survey, Bombay.
, 2, 1837	*Bogle, Lieut.-Col. Sir A., Europe.
, 3, 1859	Bolie Chand Singh, Bábu, Calcutta.
March 6, 1861	*Boulnois, C., Esquire, B. A., Europe.
Oct. 12, 1859	†Bowring, L. B., Esquire, B. C. S., Mysore.
Nov. 1, 1854	*Boycott, Dr. T. B., M. S., Europe.
April 4, 1860	Braddon, H., Esquire, Calcutta.
March 7, 1860	†Brandis, Dr. D., Rangoon.
Oct. 3, 1860	†Brandreth, J. E. L., Esquire, Rawal Pindc.
Jan. 15, 1862	†Briggs, Major D., Assam.
June 2, 1847	*Brodie, Capt. T., 5th Regt. B. N. I., Europe.
Feb. 6, 1861	Brown, J., Esquire, M. D., B. M. S., Calcutta.
Nov. 7, 1860	†Brown, Horace A., Capt., Rangoon.
March 7, 1860	Browne, Rev. J. Cavc, M. A., Calcutta.
July 4, 1860	†Bunspur Sinha, Rajah, Allahabad.
April 3, 1861	Burn, Rev. T. H., M. A., Calcutta.
Sept. 3, 1856	Busheeroodeen, Sultan Mohammad, Chinsurah.
July 4, 1860	†Byrne, L. F., Esquire, C. E., Lahore.
April 6, 1859	Calcutta, Right Rev. Lord Bishop of, Calcutta.
Sept. 7, 1859	*Campbell, Dr. A., Europe.
June 6, 1860	*Campbell, C. J., Esquire, C. E., Europe.
Jan. 4, 1860	†Carnac, J. H. Rivett, Esquire, B. C. S., Nagpur.
Sept. 3, 1856	*Chapman, R. B., Esquire, B. C. S., Europe.
Oct. 3, 1860	†Christian, J., Esquire, Monghyr.
Sept. 4, 1861	†Cockburn, J. F., Esquire, C. E., Kurhurbari Colliery.
April 2, 1862	†Colles, J. A. P., Esquire, M. D., Umritsur.
March 5, 1851	*Colvin, J. H. B., Esquire, B. C. S., Europe.
Dec. 5, 1860	†Cooper, F. H., Esquire, B. C. S., Delhi.
March 4, 1857	Cowell, E. B., Esquire, M. A., Calcutta.
July 3, 1861	*Crockett, Oliver R., Esquire, China.
April 2, 1862	†Dalrymple, F. A. E., Esquire, C. S., Dacca.
June 2, 1847	†Dalton, Major E. T., 9th Regt. B. N. I., Chota Nagpur.
Nov. 6, 1861	†Davies, R. H., Esquire, B. C. S., Punjab.
Sept. 4, 1861	Davidson, Capt. E., Bengal Engineers, Calcutta.
March 6, 1861	†Davey, N. T., Esquire, Revenue Survey, Sylhet.
June 4, 1856	†DeBourbel, Major R., Bengal Engineers, Allahabad.

*Date of Election.*

Nov.	7, 1860	Digumber Mitra, Bábu, Calcutta.
June	5, 1861	†Denison, His Excellency Sir William, K. C. B., Madras.
March	6, 1861	*Devereux, Hon'ble H. B., B. C. S., Europe.
May	8, 1862	†Dhunpati Singh Dooghur, Bábu, Moorshedabad.
Sept.	7, 1853	*Dickens, Lieut.-Col. C. H., Europe.
Jan.	9, 1861	†Dodsworth, W. T., Esquire, Meerut.
Sept.	7, 1859	Douglas, Lieut.-Col. C., Calcutta.
July	5, 1854	Drummond, Hon'ble E., B. C. S., Calcutta.
Feb.	6, 1861	†Duhan, H., Esquire, G. T. Survey, Dehra Dhoon.
Jan.	4, 1860	†Duka, Dr. T., Monghyr.
May	1, 1861	†Earle, Capt. E. L., Bengal Artillery, Kurnal.
”	6, 1857	*Eatwell, Dr. W. C. B., Europe.
Oct.	7, 1840	*Edgeworth, M. P., Esquire, B. C. S., Europe.
May	4, 1859	†Edmonstone, Hon'ble G. F., B. C. S., Allahabad.
Jan.	7, 1846	*Elliott, Hon'ble Walter, M. C. S., Europe.
Nov.	2, 1859	†Elliott, C. A., Esquire, B. C. S., Agra.
March	5, 1856	*Ellis, Lieut.-Col. R. R. W., 23rd Regt. B. N. I., Europe.
Nov.	1, 1854	†Elphinstone, Capt. N. W., 4th Regt. B. N. I., Jul-lunder.
Jan.	9, 1861	Erskine, Hon'ble C. J., Bombay C. S., Calcutta.
Augt.	6, 1856	*Erskine, Major W. C., C. B., Europe.
”	6, 1862	Eyre, Col. Vincent, C. B., Calcutta.
May	7, 1851	Fayrer, Dr. J., B. M. S., Calcutta.
Oct.	12, 1859	Fisher, A., Esquire, Calcutta.
Augt.	1, 1860	†Fitzgerald, Major C. M., Umballah.
Oct.	12, 1859	†Fitzpatrick, D., Esquire, C. S., Umritsur.
March	7, 1860	FitzWilliam, Hon'ble W. S., Calcutta.
Oct.	12, 1859	Furlong, Capt. J. G. R., Calcutta.
Feb.	6, 1861	†Forrest, R., Esquire, Civil Engineers, Dehra Dhoon.
Jan.	4, 1860	†Fraser, Capt. A., Alguada Reef.
March	7, 1860	†Frere, His Excellency Sir H. Bartle, K. C. B., B. C. S., Bombay.
Sept.	4, 1861	†Fuller, Capt. A. R., Lahore.
Dec.	7, 1859	Futteh Ali, Maulavi, Calcutta.
Sept.	5, 1849	†Fytche, Lieut.-Col. A., 70th Regt. B. N. I., Maul-mein.
”	7, 1859	†Gardener, D. M., Esquire, B. C. S., Furruckabad.
Augt.	3, 1859	Gastrell, Lt.-Col. J. E., 13th Regt. N. I., Revenue Survey, Calcutta.
Sept.	7, 1859	Geoghegan, J., Esquire, B. C. S., Calcutta.
”	2, 1842	*Gladstone, W., Esquire, Europe.
April	2, 1862	†Glazier, E. G., Esquire, C. S., Dacca.
Sept.	7, 1859	Goodeve, E., Esquire, M. D., Calcutta.
Dec.	5, 1860	†Guru Churn Doss, Bábu, Berhampore.
Sept.	5, 1860	†Goss, W. Forbes, Esquire, Nya Doomkah, Beer-bhoom.

*Date of Election.*

July	2, 1862	Gordon, J. D., Esquire, B. C. S., Calcutta.
Feb.	5, 1862	†Gourdoss Bysack, Bábu, Berhampore.
Sept.	6, 1840	Govin Chunder Sen, Bábu, Calcutta.
Dec.	7, 1859	*Grant, Sir J. P., K. C. B., Europe.
July	4, 1860	Grant, J. P., Esquire, Jr., B. C. S., Calcutta.
Jan.	4, 1860	Grant, T. R., Esquire, Calcutta.
Augt.	2, 1854	Grapel, W., Esquire, M. A., Calcutta.
March	6, 1861	†Grey, J. J., Esquire, Maldah.
July	4, 1860	Grey, Hon'ble W., B. C. S., Calcutta.
Sept.	4, 1861	†Griffin, L., Esquire, B. C. S., Lahore.
Nov.	7, 1860	†Griffith, R. T. H., Esquire, Benares.
Augt.	1, 1849	Grote, A. Esquire, B. C. S., F. L. S., Calcutta.
Feb.	6, 1861	*Growse, F. S., Esquire, B. C. S., Europe.
"	5, 1862	†Guthrie, Col. C. S., Bengal Engineers, Ootakamond.
June	2, 1847	*Hall, F. E., Esquire, M. A., D. C. L., Europe.
May	2, 1860	Halleur, Dr. H., Calcutta.
March	7, 1855	*Hamilton, R., Esquire, China.
Nov.	12, 1828	*Hamilton, Sir R. N. E., Bart., B. C. S., Europe.
May	5, 1847	*Hannington, Col. J. C., 63rd Regt. N. I., Europe.
Oct.	12, 1859	*Hardie, Dr. G. K., Europe.
"	8, 1862	Harington, Hon'ble H. B., Calcutta.
"	3, 1860	†Harris, E. B., Esquire, Civil Surgeon, Monghyr.
Feb.	6, 1861	†Harrison, A. S., Esquire, B. A., Missouri.
Oct.	12, 1859	†Haughton, Major J. C., Assam.
May	3, 1848	*Hearsay, Major General Sir J. B., K. C. B., Europe.
Augt.	6, 1862	†Heeley, W. L., Esquire, B. C. S., Nuddea.
"	3, 1859	†Henessey, J. B. N., Esquire, Dehra Dhoon.
July	6, 1853	Herschel, W. J., Esquire, B. C. S., Calcutta.
March	1, 1854	*Hichens, Lieut. W., Bengal Engineers, Europe.
May	2, 1860	Hobhouse, C. P., Esquire, B. C. S., Calcutta.
Oct.	8, 1862	Hogg, C. S., Esquire, Calcutta.
Sept.	7, 1859	*Hopkinson, Major H., Europe.
March	7, 1860	†Hovenden, Major J. J., Bengal Engineers, Allahabad.
July	2, 1862	Hyde, Lieut.-Col. H., Royal Bengal Engineers, Calcutta.
Jan.	4, 1860	†Innes, Major J. J. M., Lahore.
Oct.	8, 1862	†Irwin, Valentine, Esquire, B. C. S., Dinajpore.
Dec.	7, 1853	†Ishureeprasad Singh, Bahadur, Rajah, Benares.
Jan.	9, 1861	Jackson, Hon'ble L. S., B. C. S., Calcutta.
April	7, 1841	*Jackson, W. B., Esquire, B. C. S., Europe.
"	2, 1851	Jadava Krishna Singh, Bábu, Calcutta.
Jan.	4, 1860	Jallaluddin, Mohammad, Prince, Calcutta.
July,	5, 1854	James, Major H. C., 32nd Regt. B. N. I., Calcutta.
Dec.	4, 1861	*James, Major H. R., C. B., Europe.
"	3, 1845	Jerdon, T. C., Esquire, M. M. S., Calcutta.
July	2, 1862	Johnson, Major A. B., Bengal Staff Corps, Calcutta.
June	2, 1847	*Johnstone, J., Esquire, Europe.

## Date of Election.

March 5, 1862	†Johnstone, Lieut. J., Asst. Commissioner, Shahpore.
Sept. 7, 1859	*Jones, R., Esquire, Europe.
April 1, 1857	Joygopal Bysack, Bábu, Calcutta.
May 4, 1853	†Kabeeroodddeen Ahmed, Huzrut Shah, Sasseram.
Feb. 3, 1858	Kaliprosonno Singh, Bábu, Calcutta,
March 2, 1859	Kasinath Roy Choudhury, Bábu, Cásipur, Calcutta.
April 3, 1850	Kay, Rev. W., D. D., Calcutta.
Dec. 4, 1861	†Kempson, M., Esquire, M. A., Barcilly.
Jan. 15, 1862	†King, W., Esquire, Jr., Geological Survey, Madras.
March 6, 1839	*Laidlay, J. W., Esquire, Europe.
," 6, 1861	*Laing, Rt. Hon'ble S., Europe.
Dec. 3, 1851	*Layard, Major F. P., Europe.
April 7, 1852	Lees, Capt. W. N., LL. D., Calcutta.
Dec. 7, 1859	Leonard, H., Esquire, C. E., Calcutta.
Feb. 6, 1856	*Liebig, Dr. G. Von, B. M. S., Europe.
Jan. 4, 1860	Lindsay, E. J., Esquire, Calcutta.
Nov. 6, 1861	†Lloyd, Capt. M., Toungloo.
Dec. 3, 1862	Lobb, S., Esquire, M. A., Calcutta.
Oct. 7, 1835	*Loch, G., Esquire, B. C. S., Europe.
July 2, 1828	*Low, Hon'ble Major General J., Europe.
April 3, 1861	†Lumsden, Major P. S., Murree.
Nov. 1, 1854	*Lushington, F. A., Esquire, B. C. S., Europe.
Dec. 5, 1860	Macfarlane, D. H., Esquire, Calcutta.
April 5, 1848	†Maclagan, Lieut.-Col. R., Lahore.
March 5, 1862	Maenamara, Dr. F. N., Calcutta.
April 6, 1853	Maerae, Dr. A. C., B. M. S., Calcutta.
Jan. 4, 1860	Mair, D. K., Esquire, M. A., Calcutta.
Sept. 3, 1862	Mallet, F. R., Esquire, Calcutta.
Nov. 3, 1852	Manickjee Rustomjee, Esquire, Calcutta.
June 5, 1861	†Mán Singh, Bahadur, Maharajah, Oude.
July 4, 1860	*Man, E. G., Esquire, Europe.
Jan. 2, 1850	*Marshman, J. C., Esquire, Europe.
Sept. 3, 1862	†Martin, R. L., Esquire, B. A., Dacca.
July 3, 1862	McCrindle, J. W., Esquire, M. A., Calcutta.
Oct. 4, 1837	†McLeod, D. F., Esquire, C. B., B. C. S., Lahore.
April 6, 1853	Medlicott, J. G., Esquire, B. A., Calcutta.
March 7, 1860	Medlicott, H. B., Esquire, F. G. S., Calcutta.
Feb. 6, 1861	†Melville, Capt. A. B., late 67th N. I., Surveyor General's Dept., Dehra Dhoon.
Nov. 7, 1855	*Middleton, J., Esquire, Europe.
April 3, 1850	*Mills, A. J. M., Esquire, B. C. S., Europe.
," 7, 1847	*Money, D. I., Esquire, B. C. S., Europe.
," 4, 1860	†Money, A., Esquire, B. C. S., Bhágalpore.
Feb. 6, 1856	Money, J. W. B., Esquire, Calcutta.
July 2, 1862	Monteath, A. M., Esquire, B. C. S., Calcutta.
Feb. 1, 1860	†Montgomerie, Capt. T. G., B. E., F. R. G. S., Trigonometrical Survey, Dehra Dhoon.
Dee. 6, 1854	*Morris, G. G., Esquire, B. C. S., Europe.

*Date of Election.*

Oet. 11, 1854	*Muir, W., Esquire, B. C. S., Europe.
July 5, 1837	*Muir, J., Esquire, Europe.
Augt. 3, 1859	†Murray, Lieut. W. G., 68th N. I., Rewah.
July 2, 1862	Napier, Hon'ble Major General Sir R., K. C. B., Calcutta.
Augt. 3, 1859	†Narendra Narain Bhupa, Maharajah, Coeh Behar.
Nov. 7, 1860	†Newmarch, Major C. D., Pegu.
Sept. 1, 1852	*Nieholls, Capt. W. T., 24th Regt. M. N. I., Europe.
April 2, 1862	Norman, Lieut.-Col. H. W., C. B., Calcutta.
Aug. 3, 1859	Obbard, J., Esquire, Caleutta.
Jan. 4, 1860	†Oldham, C., Esquire, Geologeal Survey, Madras.
June 4, 1851	Oldham, T., Esquire, LL.D., F.R. S., F.G. S., Calcutta.
," 7, 1837	*O'Shaughnessy, Sir W. B., Europe.
Feb. 10, 1847	*Ouseley, Major W. R., Europe.
May 7, 1862	Partridge, S. B., Esquire, M. D., Caleutta.
Feb. 1, 1860	†Pearse, Major G. G., Madras.
June 5, 1861	†Pelly, Capt. L., Bombay Army, Zanzibar.
July 1, 1835	†Phayre, Lieut.-Col. A., Rangoon.
Oct. 8, 1862	†Poolin Behary Sein, Bábu, Berhampore.
Sept. 5, 1849	Pratáp Chandra Sinhá, Rajah, Bahadur, Calcutta.
March 6, 1839	Pratt, Ven'ble Archdeacon J. H., M. A., Caleutta.
Jan. 4, 1860	Preonath Sett, Bábu, Caleutta.
March 9, 1825	*Prinsep, C. R., Esquire, Europe.
Feb. 1, 1837	Prosonno Coomar Tagore, Bábu, Calcutta.
April 2, 1862	†Raban, Major H., Chera Poonjee.
," 2, 1862	†Rajkissen Roy, Bábu, Berhampore.
," 6, 1853	Radha Nath Sikdar, Bábu, Chandernagore.
Sept. 5, 1849	Rajendra Dutt, Bábu, Calcutta.
March 5, 1856	Rájendralála Mitra, Bábu, Caleutta.
Feb. 1, 1837	Ramánath Tagore, Bábu, Caleutta.
Augt. 5, 1840	Ramgopal Ghose, Bábu, Caleutta.
March 7, 1860	*Reid, H. S., Esquire, Europe.
June 7, 1854	*Riddell, H. B., Esquire, B. C. S., Europe.
Nov. 7, 1860	†Riley, E. O., Esquire, F. G. S., Bassein.
Augt. 6, 1856	Roberts, Hon'ble A., B. C. S., Caleutta.
March 5, 1862	†Robinson, Capt. D. G., Bengal Engineers, Dehra Dhoon.
Augt. 3, 1853	*Röer, Dr. E., Europe.
Dee. 1, 1847	*Rogers, Capt. T. E., Europe.
Sept. 7, 1859	†Russell, A. E., Esquire, B. C. S., Berhampore.
Feb. 6, 1856	†Russell, R. H., Esquire, B. C. S., Midnapore.
July 4, 1860	*Sampson, A. B., Esquire, B. A., Europe.
Nov. 2, 1859	†Sanders, J., Esquire, Calcutta.
Dee. 4, 1861	†Sanders, C. B., Esquire, B. C. S., Mysore.
," 6, 1854	†Saxton, Capt. J. H., 38th M. N. I., Cuttack.
May 2, 1854	*Sehiller, F., Esquire, Europe.
Feb. 1, 1860	*Scott, Col. E. W. S., Europe.
Augt. 3, 1859	†Scott, W. H., Esquire, Dehra Dhoon.

## Date of Election.

July 4, 1860	†Shelverton, G., Esquire, Dehra Dhoon.
Jan. 14, 1845	*Sherwill, Lieut.-Col. W. S., 66th Regt. B. N. I., F. G. S., F. R. G. S., Europe.
Sept. 7, 1859	†Sherwill, Major J. L., Manbhook.
," 4, 1861	†Shumbhoo Chunder Roy, Bábu, Rungpur.
July 4, 1860	Simpson, Dr. B., Calcutta.
Feb. 6, 1856	*Smith, Col. J. F., Europe.
March 2, 1859	*Smith, H. Scott, Esquire, B. A., Europe.
Feb. 5, 1862	†Smyth, Capt. E., Almorah.
Sept. 6, 1854	†Spankie, R., Esquire, B. C. S., Mecrut.
March 2, 1859	Stainforth, H., Esquire, Calcutta.
May 2, 1860	Stanton, Major F. S., Bengal Engineers, Europe.
Sept. 4, 1843	*Stephen, Major J. G., 8th N. I., Europe.
Oct. 8, 1862	Stevens, C. C., Esquire, B. C. S., Dum Dum.
Sept. 4, 1861	Stewart, Major P., Bengal Engineers, Europe.
Feb. 6, 1861	†Stewart, Lieut. W. J., Bengal Artillery R. Survey, Burrisal.
June 7, 1848	Strachey, J., Esquire, B. C. S., Calcutta.
May 3, 1843	Strachey, Lieut.-Col. R. F. R. S., F. L. S., F. G. S., Calcutta.
March 2, 1859	†Stubbs, Capt. F. W., Bengal Artillery, Mean Meer.
Oct. 2, 1861	†Sudderooddeen, Moonshi, Pundooah.
July 7, 1858	†Sutherland, H. C., Esquire, B. C. S., Rajshahye.
Feb. 2, 1859	†Suttischunder Roy, Maharajah, Krishnagar.
Augt. 6, 1856	Satyasharana Ghosal, Rajah, Bhookylas, Calcutta.
May 2, 1860	†Temple, R., Esquire, B. C. S., Nagpur.
March 2, 1859	†Theobald, W., Esquire, Jr., Geological Survey, Rangoon.
June 6, 1860	Thompson, J. G., Esquire, Calcutta.
," 6, 1855	*Thomson, Dr. T., M. D., F. R. S., F. L. S., F. R. G. S., Europe.
Jan. 4, 1860	Thompson, Rev. J. C., Calcutta.
Nov. 21, 1853	†Thornhill, C. B., Esquire, B. C. S., Allahabad.
June 2, 1847	Thuillier, Lieut.-Col. H. L., F. R. G. S., Bengal Artillery, Calcutta.
July 2, 1862	Thurlow, Hon'ble T. J. H., Calcutta.
Nov. 2, 1859	†Tickell, Major S. R., Moulmein.
Feb. 5, 1862	†Torrens, Col. H. D., Simlah.
June 5, 1861	†Tremlett, J. D., Esquire, B. C. S., Jullunder.
Feb. 3, 1841	Trevor, Hon'ble C. B., B. C. S., Calcutta.
March 7, 1860	Turnbull, Lieut.-Col. A. D., Roorkee.
Sept. 4, 1861	Tween, A., Esquire, Geological Survey, Calcutta.
May 2, 1860	†Vanrenen, Capt. A. D., late 71st B. N. I., R. Survey, Landour.
Oct. 2, 1861	Walagohur, Mohammad Saheb-zadah, Calcutta.
May 1, 1861	†Walker, Major J. T., Bombay Engineers, Madras.
Jan. 15, 1862	Ward, G. E., Esquire, Calcutta.

*Date of Election.*

July 7, 1852	*Ward, J. J., Esquire, B. C. S., Europe.
," 6, 1859	†Warrand, R. H. M., Esquire, B. C. S., Muttra.
," 5, 1854	*Watson, J., Esquire, B. C. S., Europe.
March 7, 1860	Wauchope, S., Esquire, C. B., B. C. S., Calcutta.
Nov. 3, 1847	*Waugh, Major-Gen. Sir A. S., C. B., F. R. S., F. R. G. S., Europe.
April 6, 1859	Wells, Hon'ble Sir Mordaunt, Kt., Calcutta.
Oct. 8, 1862	Wheeler, J. T., Esquire, Calcutta.
Sept. 4, 1861	†Williams, Dr. C., H. M.'s 68th Regt., Thayet Myo.
Augt. 3, 1859	†Wilmot, C. W., Esquire, Nya Doomka.
Oct. 8, 1862	Wilson, R. H., Esquire, Dum Dum.
Sept. 7, 1859	†Wilson, W. L., Esquire, Beerbboom.
May 7, 1851	Woodrow, H., Esquire, M. A., Calcutta.
March 2, 1859	*Wortley, Major A. H. P., Europe.
Augt. 6, 1862	Wyllie, J. W. S., Esquire, Bombay C. S., Calcutta.
April 4, 1855	*Young, Lieut.-Col. C. B., Europe.
July 2, 1856	*Yule, Lieut.-Col. H., Europe.

**LIST OF HONORARY MEMBERS.**

March 9, 1825	M. Garcin de Tassy, Membre de l' Institut., Paris.
," 1, 1826	Sir John Phillipart, London.
July 1, 1829	Count De Noe, Paris.
Sept. 7, 1831	Prof. Francis Bopp, Memb. de l' Academie de Berlin.
," 7, 1831	Prof. C. Lassen, Bonn.
Nov. 5, 1834	Sir J. F. W. Herschel, F. R. S., London.
," 5, 1834	Col. W. H. Sykes, F. R. S., London.
May 6, 1835	Prof. Lea, Philadelphia.
March 4, 1840	M. Reinaud, Memb. de l' Institut., Prof. de l' Arabe, Paris.
Feb. 4, 1842	Dr. Ewald, Gottingen.
," 4, 1842	Right Hon'ble Sir Edward Ryan, Kt., London.
March 30, 1843	Prof. Jules Mohl, Memb. de l' Institut., Paris.
May 5, 1847	His Highness Hekekyan Bey, Egypt.
Sept. 1, 1847	Col. W. Munro, London.
Nov. 3, 1847	His Highness the Nawab Nazim of Bengal, Moorshedabad.
Feb. 2, 1848	Dr. J. D. Hooker, R. N., F. R. S., London.
March 8, 1848	Prof. Henry, Princeton, United States.
April 6, 1853	Major-Gen. Sir H. C. Rawlinson, K. C. B., F. R. S., D. C. L., London.
Augt. 2, 1854	Col. Sir Proby T. Cautley, K. C. B., F. R. S., London.
March 7, 1855	Rájá Rádhákánta Deva, Báhádúr, Calcutta.
July 6, 1858	B. H. Hodgson, Esquire, Europe.
," 6, 1858	Dr. H. Falconer, F. R. S., B. M. S., Europe.
March 2, 1859	Hon'ble Sir J. W. Colvile, Kt., Europe.
," 7, 1860	Prof. Mäx Muller, Oxford.

*Date of Election.*

Nov.	7, 1860	Mons. Stanislas Julien, Paris.
"	7, 1860	Col. Sir George Everest, Kt., F. R. S., London.
"	7, 1860	Dr. Robert Wight, London.
"	7, 1860	Edward Thomas, Esquire, London.
"	7, 1860	Dr. Aloys Sprenger, Germany.
"	7, 1860	Dr. Albrecht Weber, Berlin.

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## LIST OF CORRESPONDING MEMBERS.

Oct.	2, 1844	MacGowan, Dr. J., Europe.
June	4, 1856	Kremer, Mons. A. Von, Alexandria.
"	4, 1856	Porter, Rev. J., Damaseus.
"	4, 1856	Schlagintweit, Herr H., Berlin.
"	4, 1856	Smith, Dr. E., Beyrouth.
"	4, 1856	Taylor, J., Esquire, Bussorah.
"	4, 1856	Wilson, Dr., Bombay.
March	4, 1857	Nietner, J., Esquire, Colombo, Ceylon.
"	3, 1858	Schlagintweit, Herr R., Berlin.
Nov.	2, 1859	Frederick, Dr. H., Batavia.
May	4, 1859	Bleeker, Dr. P., Batavia.
Feb.	1, 1860	Baker, Rev. H., Alipi, East Malabar.
"	1, 1860	Swinhoe, R., Esquire, Consulate, Amoy.
April	4, 1860	Haug, Dr. M., Poonah.
July	3, 1861	Gosche, Dr. R., Berlin.
March 5,	1862	Murray, A., Esquire, London.

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## LIST OF ASSOCIATE MEMBERS.

Oct.	7, 1835	Stephenson, J., Esquire, Europe.
Feb.	7, 1838	Keramut Ali, Saiëd, Hooghly.
Dec.	6, 1843	Long, Rev. J., Europe.
Jan.	14, 1845	Blyth, E., Esquire, Europe.

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## ELECTIONS IN 1862.

*Ordinary Members.*

Major D. Briggs, Assam.  
 W. King, Esquire, Jr., Geological Survey, Calcutta.  
 G. E. Ward, Esquire, Calcutta.  
 Col. C. S. Guthrie, Bengal Engineers, Otakamond.  
 Col. H. D. Torrens, Simla.  
 Bábú Gour Doss Bysack, Calcutta.  
 Capt E. Smyth, Almorah.  
 Lieut. J. Johnstone, Assistant Commissioner, Shahpore.  
 Capt. D. G. Robinson, Bengal Engineers, Dehra Dhoon.  
 Dr. F. N. Macnamara, Calcutta.  
 C. U. Aitchison, Esquire, B. C. S., Calcutta.  
 Lieut.-Col. H. W. Norman, C. B., Calcutta.  
 F. A. E. Dalrymple, Esquire, Dacca.  
 E. G. Glazier, Esquire, B. C. S., Dacca.  
 J. A. P. Colles, Esquire, M. D., Umritsur.  
 Major H. Raban, Patna.  
 Bábú Rajkissen Roy, Berhampore.  
 Bábú Dhunpat Singh Dooghur, Berhampore.  
 S. B. Partridge, Esquire, M. D., Calcutta.  
 Dr. Bhau Daji, Bombay.  
 Hon'ble T. J. H. Thurlow, Calcutta.  
 J. D. Gordon, Esquire, B. C. S., Calcutta.  
 A. M. Monteath, Esquire, B. C. S., Calcutta.  
 Major A. B. Johnson, Bengal Staff Corps, Calcutta.  
 Hon'ble, Major General Sir R. Napier, K. C. B., Calcutta.  
 Bábú Bhola Nauth Mullick, Calcutta.  
 Lieut.-Col. H. Hyde, Royal Bengal Engineers, Calcutta.  
 Capt. J. P. Basevi, Vizagapatam.  
 H. Beverley, Esquire, B. C. S., Monghyr.  
 Col. Vincent Eyre, C. B., Calcutta.  
 W. L. Heeley, Esquire, B. C. S., Nuddea.  
 J. W. S. Wyllie, Esquire, B. C. S., Calcutta.  
 F. R. Mallet, Esquire, Calcutta.  
 R. L. Martin, Esquire, B. A., Dacca.  
 Rajah Apurva Krishna, Calcutta.  
 C. E. Bernard, Esquire, Calcutta.

C. S. Hogg, Esquire, Calcutta.  
 Hon'ble H. B. Harrington, B. C. S. Calcutta.  
 Valentine Irwin, Esquire, B. C. S. Dinajpur.  
 Bábú Poolin Behary Sen, Berhampore.  
 C. C. Stevens, Esquire, B. C. S., Dum Dum.  
 R. H. Wilson, Esquire, Dum Dum.  
 J. T. Wheeler, Esquire, Calcutta.  
 S. Lobb, Esquire, M. A., Presidency College, Calcutta.

*Corresponding Member.*

A. Murray, Esquire, London.

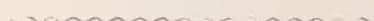
LOSS OF MEMBERS DURING THE YEAR 1862.

*By retirement.*

Bábú Nundolal Bose, Calcutta.  
 Capt. W. A. Ross, Cawnpore.  
 H. Bell, Esquire, B. C. S., Jessore.  
 Rev. F. F. Mazuchelli, D.D., Calcutta.  
 Capt. De la Chaumette, Calcutta.

*By death.*

Hon'ble W. Ritchie, Calcutta.  
 Rajah Prasanno Nath Roy Bahadur, Degaputti, Rajshahye.  
 E. A. Blundell, Esquire, Singapore.  
 Bábú Jogindra Narain Roy, Rajshahye.  
 Bábú Ramáprasád Roy, Calcutta.  
 T. E. B. Judge, Esquire, Calcutta.  
 Dr. W. Crozier, Calcutta.



## FOR FEBRUARY, 1863.

The monthly General Meeting of the Asiatic Society was held on the 4th instant.

Lieutenant-Colonel H. L. Thuillier, President, in the chair.

Presentations were received—

1. From the Government of India, Foreign Department, two copies of a series of twenty-eight Photographs illustrating the tribes of the Nagpore province, taken by Lieut. W. W. Hooper, of the seventh Madras Light Cavalry.
2. From Dr. Bhau Daji, a copy of the Ramayana, printed by Ganopati Krishna, Bombay.
3. From Bábú Rájendra Mulliek, two Ostrich eggs and a couple of Emu eggs and a specimen of the red-headed Crane.
4. From A. Grote, Esq., a young Kangaroo in spirit.

Read a letter from J. T. Wheeler, Esq., Asst. Secy. to the Government of India, Foreign Department, forwarding the following communication from the Political Agent at Nimar, reporting the particulars of an earthquake in that province and the Burwani territory, on the night of the 18th November last.

FROM CAPTAIN J. C. WOOD, *Political Agent in Nimar.*

TO MAJOR R. J. MEADE, *Agent, Govr.-Genl. for Central India.*

*Dated, Camp Boorhanpoor, 26th, Dec., 1862.*

SIR,—I have the honor to inform you, that on the night of the 18th ultimo at about  $7\frac{1}{2}$  o'clock, a shock of an earthquake was felt almost throughout Nimar and throughout the Burwani territory, accompanied with a very loud noise resembling the tramping of a multitude of horses.

2. The direction was from North-west to the South-east.
3. The shock was more severe in the Burwani country than elsewhere. Portions of walls fell down in some cases, and tiles were knocked off in other instances.
4. The shock was felt simultaneously from Burwani West to Poonassa East, South of the Nerbudda; and from Manupoor West to Burwani East, North of the Nerbudda.
5. These phenomena were not noticeable South of the Satpoora

range at Boorhanpoor, nor in the Zainabad Purgunnah South of the Taptee.

6. The weather was very sultry at the time, and rain fell every where in Nimar a day or two after the shock of the earthquake was felt.

7. Shocks of earthquakes are very rarely felt in Nimar.

I have, &c.,

(Sd.) J. C. Wood,

*Political Agent.*

Letters from W. Grapel, Esq., and Bábú Rajkissen Roy, expressing their desire to withdraw from the Society were recorded.

The following gentlemen duly proposed at the last meeting were balloted for and elected ordinary members :—

E. T. Trevor, Esq., C. S., and the Hon'ble Raja Deo Narain Singh.

The following gentlemen were named for ballot as ordinary members at the next meeting :—

The Rt. Hon'ble Sir Charles Trevelyan, K. C. B., proposed by Lieutenant-Colonel R. Strachey and seconded by Mr. Atkinson.

The Hon'ble A. Eden, proposed by Mr. Medlicott and seconded by Mr. T. Oldham.

Bábú Hari Doss Dutt, proposed by Bábú Rájendralál Mitra and seconded by Mr. Grote.

Captain G. Hunter Thompson, Bengal Staff Corps, Revenue Survey Department, proposed by the President and seconded by Major J. E. Gastrell.

H. M. Rogers, Esq., C. S., proposed by Captain W. N. Lees and seconded by the President.

The Council reported that they had appointed the following Sub-Committees for 1863 :—

*Finance.*—Dr. J. Fayerer ; Bábú Rájendralál Mitra.

*Philology.*—Captain W. N. Lees ; Bábú Rájendralál Mitra ; E. C. Bayley, Esq. ; Hon'ble C. J. Erskine ; R. T. H. Griffith, Esq. ; and A. Grote, Esq.

*Library.*—Bábú Rájendralál Mitra ; Captain W. N. Lees ; Dr. J. Fayerer ; Dr. T. Anderson ; and T. Oldham, Esq.

*Natural History.*—T. Oldham, Esq. ; Dr. T. Anderson ; Dr. A. C. Macrae ; Dr. J. Fayerer ; A. Grote, Esq. ; H. F. Blanford, Esq. ; and Dr. T. C. Jerdon.

*Meteorology and Physical Science.*—The Ven'ble J. H. Pratt; T. Oldham, Esq.; Lieutenant-Colonel R. Strachey; Major J. T. Walker; Captain T. G. Montgomerie; J. Obbard, Esq.; and Major J. E. Gastrell.

*Coin Committee.*—Captain W. N. Lees; E. C. Bayley, Esq.; Bábá Rájendralál Mitra; and A. Grote, Esq.

*Committee of Papers.*—E. C. Bayley, Esq., and A. Grote, Esq.

In submitting the above list of the Committees for the approval of the meeting, the President stated that it was the object of the Council to make each department as complete and efficient as possible by the addition of the names of members of the Society not in the Council, whether resident in Calcutta or otherwise, for the advice and assistance of gentlemen at a distance could be obtained at all times, and might prove especially useful. He therefore begged that if any member could suggest the names of any other gentlemen likely to take an interest in and further the important objects of the various sections, they would be good enough to do so, in order that the Council might have the benefit of their services.

No other names being proposcd the lists were declared closed and accepted.

The President brought to the notice of the meeting that the Council had resolved to establish suitable albums for the collection of photographs of the Archæological remains with which the country abounds, as well as for ethnological subjects, including the series which had been presented to the Society by the Government, and which were now being taken in various parts of India. A record of these valuable representations which photography was now so actively employed in perpetuating, he thought would be peculiarly appropriate and useful to the Society, and when once a start was made, it might be hoped, that many members would be able and willing to aid the collection, so as eventually to produce a most valuable and interesting work of reference. He therefore trusted members would be kind enough to bear the subject in remembrance, and favour the Society with their contributions from time to time. It was likewise proposed to have a portrait album of Members of the Society.

Communications were received—

1. From E. O. Riley, Esq., a paper entitled Remarks on the Lake of clear water in the District of Bassein, British Burmah.

2. From Captain E. C. S. Williams, Under-Secretary to the Government of India, Public Works Department, copy of a report by Major General Cunningham, Archaeological Surveyor, on his researches up to March last, and a statement of his operations during last November.

3. From Bábú Gopinath Sein, abstracts of the results of the Hourly Meteorological observations taken at the Surveyor General's Office in November last.

The President then called on Mr. H. F. Blanford to read a paper on the Distribution of the land Gasteropoda of India and Burmah, by Mr. W. Theobald, Junior, of the Geological Survey, who was absent on duty.

The author commenced by expressing his dissent from Mr. Darwin's theory, and from certain views communicated in a paper by the Messrs. Blanford as to the mode of distribution of the Mollusca faunas of the isolated hill groups of Southern India. The observed fact having been that there is a remarkable similarity and in many cases identity between the land shells of the Nilgerries, Puehaniallies, Shevaroys, &c. while those of the intervening plains are very different; it had been suggested that at a former period, when (as indicated by geological investigation) a large part of India was submerged beneath the sea, an interchange of species had taken place between the hill groups in question by floating timber, &c., or else that these species had emigrated across the plains when partially up-heaved and covered with a damp forest such as is requisite for the existence of these Mollusca. Mr. Theobald demurred to these views, on the ground that the transport of shells on floating timber must be so rare an occurrence as to be inapplicable to the case, and that there is no migratory instinct in snails similar to that of birds to impel them to extend their area of habitat as suggested. On the contrary, Mr. Theobald held that species were of sporadic origin, instancing in support of this view, the acknowledged ethnic centres of the human race. Moreover, he held, in opposition to Mr. Darwin, that species were incapable of variation to an unlimited extent. He pointed out that the land Mollusca of India were, as a rule, confined to definite provinces and at the conclusion of his paper gave a list of those provinces and of the land Mollusca peculiar to each.

Mr. H. F. Blanford in reply to Mr. Theobald's remarks, pointed out

to the meeting that the theory of specific centres, or in other words, the restriction of species as a rule to definite areas was the only assumption made by Messrs. Blanford in their paper, and so far from being disproved by Mr. Theobald it had been actually strengthened by his division of India into provinces, each of which had its peculiar Mollusca. That species were thus restricted as a rule was admitted by naturalists, almost without exception, and it was on this ground that the Messrs. Blanford had sought to explain the observed exception in the case of the hill faunas of Southern India. Carriage of Mollusca on floating wood was admitted to be exceptional and rare, but cases of the kind had been observed and experiments made which proved its possibility. It is true that no migratory instinct is known in snails, but, given increase of numbers and power of locomotion, and an extension of species over an increased area would necessarily follow until restrained by adverse conditions. As to the ethnic centres of the human race, it was observed that because, as argued, the sub-divisions of a species had sprung from definite centres, there was no reason to infer that the progenitors of these sub-divisions had not likewise sprung from a common centre. The sporadic origin of species is not held by any eminent naturalists of the present day, and Mr. Theobald had advanced no instance in its favour. Mr. Blanford further denied that there was any evidence of the limitation of variability in species, and pointing out that Mr. Theobald had advanced no arguments in support of his own view, gave instances to prove, that variation is known to such an extent that the variety is no longer capable of interbreeding with the parent stock: moreover, that many of our domestic varieties of animals and plants have become so much altered that the parent stock is either unknown or can only be indicated with doubt.

Mr. Blanford concurred generally with Mr. Theobald's division of India into sub-provinces, but would make some alterations therein.

The President proposed that the thanks of the meeting should be given to Mr. Theobald for his interesting paper, which would appear in the Journal in the usual course. The Society were especially indebted to the gentlemen of the Geological Survey of India, who, in the course of their travels and researches over the length and breadth of this country found so many opportunities of sending papers to the Society.

The President said he had much pleasure in introducing to the meeting a member from the Sister Presidency, Dr. Bhau Daji, of Bombay, of whom they had doubtless heard, as an eminent philologist. He was glad to find that the Doctor was prepared to make some remarks to the meeting, which no doubt would prove acceptable.

Dr. Bhau Daji then read an abstract of a paper which he had previously read before the Bombay Branch of the Royal Asiatic Society on the value of the numerical symbols in ancient Hindoo inscriptions. He had been enabled to ascertain their correct value from finding certain inscriptions, especially those at Nassick, where the symbols occurred with their value at the same time given in words. Dr. Bhau Daji also added some remarks on the era of Salivahan, which he would identify with the era of Kshaharata or Phrahates, one of the Arsacidæ. In the same way it seemed to him not improbable that the era of Vikramaditya was introduced by the Buddhists or Jains, and that it corresponds to the victory obtained by the Parthians over Crassus, B. C. 53. He concluded with presenting to the Society copies of his transcripts and translations of the Junagur and Adjunta inscriptions.

The thanks of the meeting were voted to Dr. Bhau Daji for his valuable communication, and the transcripts presented by him.

The President offered to produce *fac-similes* of the inscriptions on a reduced scale by the photo-lithographic process, which, although in its infancy here, was peculiarly adapted for such purposes. He expressed a hope also that Dr. Bhau Daji in the course of his travels in the N. W. Provinces and Kashmir, whither he was now going, would be able to transmit to the Society some of the fruits of his researches, which it would give the Council great pleasure to receive.

The Librarian then submitted his report.

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#### LIBRARY.

The following are the accessions to the Library since the meeting held in November last.

#### *Presented.*

Brockhaus' die Lieder des Hafis Persisch mit dem commentare des Sudi Vols. I. to III.—**BY THE AUTHOR.**

Bombay Magnetical and Meteorological Observations for 1861.—**BY THE BOMBAY GOVERNMENT.**

On the Horizontal Force of the Earth's Magnetism. By J. A. Broun, Esq.  
—BY THE AUTHOR.

The Bifilar Magnetometer.—BY THE SAME.

De la connexion entre les phénomènes météorologiques et les variations du Magnetisme Terrestre.—BY THE SAME.

Memoirs of the Royal Astronomical Society, Vols. XXVIII. to XXX.  
—BY THE ROYAL ASTRONOMICAL SOCIETY.

Memoirs of the Geological Survey of India, *Palæontologia Indica*, Vol. 2., Part IV.—BY THE SUPERINTENDENT GEOLOGICAL SURVEY OF INDIA.

Ditto ditto.—BY THE GOVERNMENT OF INDIA.

Ditto ditto.—BY THE BENGAL GOVERNMENT.

Díván-i Nigár, 4 copies. By Babu Joygopal Bysack.—BY THE AUTHOR.  
Garcin de Tassy's *Cours d' Hindoustani*—Discours D'ouverture, du 1<sup>er</sup> Decembre 1862.—BY THE AUTHOR.

Journal of the Royal Asiatic Society, Vol. XX. Part I.—BY THE ROYAL ASIATIC SOCIETY OF LONDON.

Notices of the Proceedings of the meeting.—BY THE SAME.

Oriental Baptist for October, 1862.—BY THE EDITOR.

Oriental Christian Spectator for September, October and November, 1862.  
—BY THE EDITOR.

The Calcutta Christian Spectator for January, 1863.—BY THE EDITOR.

Selections from the Records of the Bombay Government, Nos. LXVI. & LXVII.—BY THE GOVERNMENT OF BOMBAY.

Selections from the Records of the Government, North-Western Provinces, Part XXXVIII.—BY THE GOVERNMENT N. W. PROVINCES.

Narrative of the course of Legislation, during the official year 1861-62.—BY THE BENGAL GOVERNMENT.

Annual Report on the Administration of the Punjab Territories for the year 1861-62.—BY THE SAME.

Annual Report on the operations of the Post Office of India, for the year 1861-62.—BY THE SAME.

Annual Report on the Administration of the Central Provinces, for the year 1861-62.—BY THE SAME.

Annual Report on the Administration of the Electric Telegraph, for the year 1861-62.—BY THE SAME.

Lieut.-Col. Hamilton's Report on the Shevaroy Hills.—BY THE MADRAS GOVERNMENT.

Ditto ditto on the Pulni Mountains.—BY THE SAME.

Murdoch's Indian Year-Book for 1861, a review of Social, Intellectual and Religious Progress in India and Ceylon.—BY THE COMPILER.

Proceedings of the Royal Geographical Society of London Vol. VI. No. 5.  
—BY THE SOCIETY.

The Quarterly Journal of the Geological Society, Vol. XVIII., No. 72.—  
BY THE SOCIETY.

List of the Geological Society of London, Nov. 1862.—BY THE SAME.

Charter and Bye-Law of the Geological Society of London.—BY THE SAME.

Returns shewing the operations of the Income Tax Act in the N. W. Provinces, for 1860-61.—BY THE GOVERNMENT N. W. PROVINCES.

Photographs and Notes descriptive of the tribes of Berar.—BY THE GOVERNMENT OF INDIA.

A complete set of Photographs of Indian tribes prepared under the orders of the Bengal Government for the London Exhibition.—BY THE BENGAL GOVERNMENT.

Jahrbuch der Geologischen Reichsanstalt, Vol. XII. No. 3.—BY THE VIENNA GEOLOGICAL MUSEUM.

Dr. Weber's Über der Vedakalendor, Namens Jyotisham.—BY THE AUTHOR.

*Exchanged.*

The Athenæum for October and November, 1862.

The London and Edinburgh Philosophical Magazine, Vol. XXIV. Nos. 162 and 163.

*Purchased.*

Mahábhárata translated by Ph. Ed. Foucaux.

Revue des deux Mondes for October, November and December, 1862.

Journal des Savants for October and November, 1862.

Tornberg's Ibn-El-Athiri.

Revue de Zoologie, Nos. 9 and 10, 1862.

The Annals and Magazine of Natural History for November and Dec., 1862.

The American Journal, Vol. XXXIV. No. 101.

The Parthenon, Vol. I. Nos. 25 to 33.

Grimm's Deutsches Wörterbuch Dritter Band.

Brugsch's Reise der K. P. Gesandtschaft Nach Persien, Vol. I.

Dr. T. C. Jerdon's Birds of India, Vol. I. Two copies.

Annales des Sciences Naturelles—Botanique. Vol. XVII. Nos. 1, 2 and 3.

## Report of the Curator, Zoological Department.

(Continued from Vol. XXXI. p. 345.)

III. W. T. Blanford, Esq., of the Indian Geological Survey.  
A collection of sundries from different parts of Burmá.

## MAMMALIA.

PRESBYTIS PHAYREI, nobis; from Arakan; NYCTICEJUS TEMMINCKII and SCOTOPHILUS COROMANDELIANUS, from Thayet Myo, on the Irawádi (being two of the commonest Bats throughout India, Burmá, and the Malayan peninsula). Also RHIZOMYS BADIUS, Hodgson, from Arakan.

TUPAIA FERRUGINEA (var. *peguana*, Lesson). Also a very common species in the Burmese countries, ascending northward to the Khásya hills, and likewise inhabiting the vicinity of Dorjiling. Specimen from "Arakan mountains."

\*SCIURUS BLANFORDII, nobis, *n. s.* (described Vol. XXXI, *J. A. S.* p. 333.) From the neighbourhood of Ava—"common on the Shán hills, less so in the neighbourhood of the river near Ava."

MUS CONCOLOR, nobis, young described, *J. A. S. XXVIII*, 295, and adult (unnamed, noticed in preceding page). "House Rats, from Thayet Myo." This is rather a great Mouse than a Rat, if the distinction can be understood; very like *M. MUSCULUS*, except in being much larger, with a proportionally longer tail. Length of adult male, taken out of spirit and the fur dried—head and body  $4\frac{1}{2}$  in., and tail  $5\frac{1}{4}$  in.; ear-conch (posteriorly)  $\frac{9}{16}$  in.; hind-foot 1 in. Its close similitude to *M. MUSCULUS* renders further description unnecessary; except that the paler colour of the lower-parts has a peculiar reddish-sandy or faint vinaceous tinge (a sort of *isabelline* hue), and the fur of the back is distinctly spinous to the sense of touch. In the thatched roofs of the Burmese up the Salwin river, I several times observed a small long-tailed Rat, which I very strongly suspect, indeed feel quite sure, was of the present kind, but I was unable to obtain a specimen.† An old stuffed example in the Society's collection, from Malacca, seems also, perhaps, to be

\* I find that I have referred to this in *J. A. S. XXXI*, 391.

† Since writing the above, I have been assured, positively, that *CORVUS SPLENDENS*, of either race, does not occur, either at Pinang, Malacca, or Singapore.

identical: though I have my doubts, and I have found several specimens, obtained by the late Major Berdmore at Schwe Gyen.

### AVES.

**IERAX EUTOLMOS**, Hodgson. From Shán hills E. of Ava. "Said to live on beetles. In the Southern Tenasserim Provinces, the **I. FRINGILLARIUS**, (Drapiez), begins to appear, and is the only species which I have seen from the Malayan peninsula. In fine specimens of this, the whole abdominal region is deep ferruginous, contrasting with a white breast (in general tinged a little with ferruginous); but the flanks and *tibial plumes* are always deep black. **I. EUTOLMOS** is the species which approaches nearest to Edwards's figure and description of **I. BENGALENSIS**, (L.); but is conspicuously distinguished by its broad white band across the nape, continuous with the broad white supercilia, also by its deep ferruginous throat and *tibial plumes*; but what appear to be the young have rufous forehead and supercilia, and a white throat. **I. BENGALENSIS** is a race which still remains to be verified. **I. MELANOLEUCOS**, nobis, has no ferruginous colouring whatever, and pure white tibial plumes; being also rather larger than the others. The Society's only specimen was received alive from Asám; and another is noted in the Catalogue of the India-house Museum, the habitat of which is unknown.

**BUCEOS CAVATUS**, L. Head from Ava.

**B. ALBIROSTRIS**, Shaw. "From Shán hills. The same species is common along the base of the Arakan hills in Pegu. I have not met with it on the alluvium." It seems to be common throughout Burmá, and in the forests of Upper Martaban, together with the preceding. It is not generally known that the Hornbills are capital eating, as I can testify from experience.

**CERYLE RUDIS**, (L.) "More common above Ava than in Pegu."

**ALEEDO MENINGTING**, Horsf. (*A. asiatica*, Swainson) "Replaces on the sea-coast the **A. BENGALENSIS** of the interior."

**HALCYON LEUCOCEPHALUS**, (L.) The Burmese race seems always to have a somewhat albescens cap.

**MEROPS QUINTICOLOR**, Vieillot. (Obtained also by myself near Maulmein, and in Upper Martaban; likewise **M. PHILIPPINENSIS** at Rangoon; and **M. VIRIDIS** everywhere, mostly with a redder head than in India. I observed numbers of this last species bur-

rowing into the hill-side (soft laterite), along deep road-euttings near Maulmein.)

MEGALAIMA INDICA, (Latham). Common here and there; but in general less so than M. LINEATA, (Vieillot), the voice of which is quite similar to that of M. CANICEPS, (Franklin).

MULLERIPICUS PULVERULENTUS, (Tem.). "Shán hills E. of Ava. Very noisy. Only met with once, in a small flock of five or six, at a height of about 2,000 ft., in the Shán hills, east of Ava."

MULLERIPICUS FEDDENI, Blanford. (M. JAVENSIS of Burmá, auctorum.) Differs from M. JAVENSIS, (Horsf. v. *leucogaster*, Tem.,) of the Malay countries, by its white rump; in which it resembles M. HODGSONI, Jerdon, of Malabar: while the extent of slightly buffy-white colouring on the inside of the wing is greatly increased occupying the basal half of the remiges. In M. HODGEI, nobis, of the Andamán islands, the plumage is wholly black, with the exception of the usual crimson marks on the head. In other respects, these four races bear a near resemblance to each other.

PICUS BLANFORDI, nobis, n. s. Very like P. MAHRATTENSIS of India; but the white markings generally more developed, as especially shewn on the wings and tail. It is just barely separable as a race.

GECINUS VIRIDANUS, nobis. "From banks of Irawádi." I observed it numerously in Martaban, as also G. OCCIPITALIS, (Vigors).

G. CHLOROPUS, (Vieillot). "From the same place as the PULVERULENTUS."

TIGA INTERMEDIA, nobis. "From Thayet Myo, where not very rare." I obtained both this and the preceding species on the Salwin, and also in the forests of Upper Martaban. In the same habitat, the diminutive PICUS MOLUCCENSIS (var. *canicapillus*, nobis) abounded; and I obtained HEMICIRCUS CANENTE, (Lesson), at the base of limestone hills along the Salwin.

CUCULUS TENUIROSTRIS, Gray. "Near Ava." Likewise obtained by myself: as also C. CANORUS at Moulmein, in immature plumage; C. HIMALAYANUS in Upper Martaban; C. STRIATUS, Drapiez, plentifully in the rainy season, when very musical, on the hills near Maulmein; C. VARIUS at Maulmein; and CRYSOCOCX (Trogon maculatus of Brown's Illustrations) once at Maulmein.

HARPACEDES ERYTHROCEPHALUS, Gould. A particularly fine pair.

**CORVUS SPLENDENS**, Vieillot. "The common Crows in Mandell have the grey mark on their necks as distinctly as the Crows of Caleutta." In Akyab the Crows are also of the common Indian race; which appeared for the first time in Khyouk Phao on the 7th December, 1856, on which day (as I am informed by Major Ripley) a party of seven individuals arrived there, which have since stocked the neighbourhood. South of Khyouk Phao, this Crow has still no representative in Arakan; but across the mountains which divide that province from Pegu, in the valley of the Irawádi, again at Maulmein, Tavoy, and as far south as Mergui, it is replaced by a wholly black race, quite similar both in form and habit, but having a much shriller voice (a sort of *shrieking* eaw, if possible still more inharmonious than that of the other). There is just a very faint tinge of ashy on the neck and breast, where the common Indian Crow is pure cinereous; but this must be specially looked for to be remarked. In the Ceylon race, the grey of the neck and breast is much darker than in that common (I believe) to all India; but very far from black as in the Crows of Burmá. Whether this race extends to the Malayan peninsula, I am unaware; but we know little of the ornithology of that peninsula northward of the latitude of Pinang. The large black Crow of all India (*C. CULMINATUS*,) extends throughout Burmá and the Malayan peninsula, and is doubtless the Sumatran *C. corax* apud Raffles; but, in the southern portion of the Malayan peninsula, there is another large black Crow with remarkably long bill (*C. MACRORHYNCHOS*, Vieillot), which again is distinct from the *C. ENCA*, Horsf., of Java and other islands further east. In Burmá, as in India, the *C. CULMINATUS* is diffused in pairs over the country, and is found even in the depths of the forest, remote from human habitations; whereas the black race of *C. SPLENDENS*, like the grey-necked race, is only observed near towns or populous villages. The difference of these two races corresponding to that of the Carrion and Hooded Crows of Europe, which are currently regarded as different species.\*

\* The Jackal has only recently occurred about Akyab; though, for years past, it has frequented the country through which the Koladyne river flows into Akyab harbour. It also occurs, rarely, about Prome, and thence northward to Ava; but nowhere in the maritime provinces of British Burmá, south of Akyab, where (as before remarked) it has only lately made its first appearance.

The common House Maina (*ACRIDOTHERUS TRISTIS*), and the representative of the Pied Starling (*STURNOPASTOR SUPERCILIARIS*), I observed abundantly so

CRYPSIRINA CUCULLATA, Jerdon (*J. A. S.* XXXI, p. 341).  
"Thayet Myo."

TEMENUCHUS BURMANENSIS, Jerdon (p. 342.) "Common throughout Burmá." I did not meet with it.

STURNOPASTOR SUPERCILIARIS, nobis. Differs from the Indian race in having a distinct white supercilium, in addition to the white ear-coverts, with streaks of white also tipping the feathers of the forehead. One specimen has a white-necked collar; but this I take to be abnormal. Just a distinctly recognisable race; and as well distinguished as others which are accepted as such.

EUSPIZA AUREOLA, (Pallas). "Twenty miles above Ava."

EUSPIZA RUTILA; *Emberiza rutila*, Pallas. A very pretty Bunting; the male uniformly reddish-ferruginous or rufous-bay, with the lower parts, from the breast, bright (though not deep) yellow; the primaries and rectrices dusky; and the wings underneath white anteriorly. Closed wing 3 in. From S. Arakan. One specimen only. Akin to EU. AUREOLA and others.

MIRAFRA AFFINIS, Jerdon. Upper Pegu.

GARRULAX MONILIGER, (Hodgson.) "Puppa hill, near Pagan, where not very common. Since shot near Thayet Myo."

CHATARRHÆA GULARIS, nobis, *J. A. S.* XXIV, 478. "This bird is extremely abundant among the low thorn bushes which cover the dry country about Yenankhyoung and Pagan. It is just as common near Ava."

MEGALURUS PALUSTRIS, Horsfield. "Found in much the same places as the CHATARRHÆA EARLEI; viz. in long elephant-grass; but

far south as Mergui; but am unaware that either has been recorded from the Malayan peninsula. As in Ceylon, the House Maina of the Tenasserim Provinces is darker-coloured than in India.

When first at Akyab, during the rainy season, I remarked the British Tree Sparrow (*PASSER MONTANUS*) to be the common species about the streets; considerably out-numbering the Indian House Sparrow (*P. DOMESTICUS, Ind. var.*): whereas, in the cold season, the latter is the prevalent species about Akyab. Southward, however, I only on two occasions saw the common Indian Sparrow; once at Maulmein, and once in a Burmese village higher up the Salwin; whereas the Tree Sparrow is everywhere in extreme abundance, extending southward to Singapore (*J. A. S.* 1859, p. 443), and likewise inhabiting Java; having precisely the same habits as the other. I observed it, numerously, as far south as Tavoy and Mergui. At Thayet Myo, on the Irawádi, Dr. Jerdon informs me that not only are *P. DOMESTICUS* and *P. MONTANUS* common, but also a third species my pretty little *P. FLAVEOLUS*. When at Palipoon, in Upper Martaban, in November last, three or four pairs of *P. MONTANUS* appeared for one day only, entering the few human abodes in the most familiar manner, and apparently seeking convenient nooks for nesting-places; but I saw no others in that wild forest region.

its song is finer and its flight much stronger than that of the *MALACOCERCUS* group. It generally towers when it rises from the grass, and takes long flights. I have only met with this bird above Ava,—near Thayet Myo, where *CH. EARLEI* and *CH. GULARIS* are common. *CH. EARLEI* I shot thirty miles above Ava." *M. PALUSTRIS* I observed in considerable abundance in low brushwood about Akyab harbour. *CH. EARLEI* I have not yet seen from the Burmese region; but Col. Phayre obtained *CH. CAUDATA* in addition to *CH. GULARIS*.

*LANIUS HYPOLEUCOS*, nobis. "Ava." Extremely common during the cold season near Maulmein; where it takes the place of *L. PHÆNICURUS*, Pall., so abundant in lower Bengal and also about Akyab. *L. HYPOLEUCOS* has been received from Bangkok.\*

*PETROCINCLA CYANEA*, (L.) "Common from Kenankhyoung as far as I went, viz. to Malí, nearly 100 miles above Ava." I found this species everywhere plentiful in Burmá, and very tame and familiar, *i. e.* during the cold season. Some individuals were undistinguishable from the S. Indian race (*A. pandoo*, Sykes), others from the E. Himalayan race (*A. affinis*, nobis), and the Chinese and Philippine race (*A. manillensis*) is again equivalent, and all (with the Kashmieran (*A. longirostris*) cannot be satisfactorily distinguished from *P. CYANEA* of S. Europe and N. Africa.

*CYORNIS RUBECULOIDES*, (Vigors). "Fifty miles above Ava. Occurs I think only in forest. I shot it also at 2000 ft. in height upon the Shan hills." Not uncommon in Burmá during the cold season.

*GRAUCALUS MACEI*, Cuv.

*PYCNONOTUS NIGROPILEUS*, Blyth. "Ava. Common throughout Burmá." In Arakan, replaced by *P. HæMORRHous*, as in Bengal by *P. CAFER*. The habits and notes of all three are as similar as can well be.

*PRATINCOLA LEUCURA*, Blyth. A specimen of this bird was procured by Sir A. Burnes in Scindh; I have never seen it from the vicinity of Calcutta, but Dr. Jerdon lately observed it plentifully in the country about Colgong and Caragola, on the main stream of the Ganges, and also at Thayet Myo on the Irawádi. Mr. Blanford

\* There are four distinguishable races of Shrikes, which are very nearly akin.

1. *L. SUPERCILIOSUS*, L. From the Malayan peninsula.
2. *L. PHÆNICURUS*, Pallas. India generally; Arakan.
3. *L. ARENARIUS*, nobis. Desert region of N. W. India.
4. *L. LUCIONENSIS*, L. China; Philippines, Ceylon; Andamáns (?)

writes—"It abounds in long grass on the river-banks in Lower Pegu, and I found it equally common sixty miles above Ava." It has doubtless often been confounded with *PR. INDICA*; from which it is readily distinguished by the large quantity of white on the inner webs of the tail-feathers.

*RHODOPHILA MELANOLEUCA*, Jerdon, *n. g. et sp.* This curious little bird was discovered, not long ago, by Dr. Jerdon, in plenty about Caragola, on the main stream of the Ganges, where it haunted the *interior* of the wild rose-bushes (*Rosa involucrata*), there constituting much of the ordinary low jungle; and never perching on the topmost sprays, like the Stonechats and other *vaxicolinæ*. Mr. Blandford has since obtained in Arakan. The form appears to me to approximate *Curruca* most nearly; but the tarsi and toes are more slender, and the claws more gracile and elongated. The wings and tail are also more graduated; and the general plumage softer. Colours remarkable; plain glossy black above (inclusive of the ear-coverts), and plain white below. Bill and feet black. Length of closed wing  $2\frac{3}{4}$  inch; of tail  $2\frac{1}{2}$  inch. I shall leave Dr. Jerdon to describe it more in detail.

*PHYLLORNIS AURIFRONS*, (J. and S.) "Near Thingadau, seventy miles above Ava; also Thayet Myo." I obtained it at Maulmein; and *Ph. COCHINCHINENSIS* in the forests of Upper Martaban.

*LEUCOCERCA ALBOFRONTATA*, (? Franklin.) Here, again, the race is a little different from the Indian one; being just distinguishable by having the white of the forehead and supereilia not so broad, nor meeting round behind at the occiput. There is also not so much white on the tail-feathers. Upper Pegu.

*IORA TYPHIA*, (L.) "Common throughout Burmá."

*ORIOLUS MELANOCEPHALUS*, Gm. "Seventy miles above Ava. I have shot this and three other species near Thayet Myo." *O. MELANOCEPHALUS* seems to be common throughout Burmá, and extends down the Malayan peninsula; being quite similar to the Bengal race, and constantly distinguishable from that of Malabar and Ceylon (*O. CEYLONENSIS*, Bonap.) *O. INDICUS* (*v. chinensis*) is also common in the Burmese region, and *O. TENUIROSTRIS*, nobis, is less so. I obtained a mature female of the latter at Maulmein, and doubt if the mature male is yet known. Specimens of *O. INDICUS* from China are undistinguishable from Indian examples, and appear to be the *O.*

*ehinensis*, L., et *O. cochineehinensis*, Brisson,—but not *O. ACROCHYNCHOS*, Vigors, of the Philippines. *O. TRAILLII* inhabits the higher mountains of Burmá; but is not likely to have been obtained by Mr. Blanford at Thayet Myo.\*

**NECTARINIA ASIATICA**, (L.) “Yenankhyoung.” The most widely diffused of the Asiatic species. At Maulmein I obtained *N. FLAMMAXILLARIS*, nobis (there common), and *N. HASSELTII*, Tem. (apparently rare). The last ranges from Arakan to Singapore; but *N FLAMMAXILLARIS* is replaced in the Malayan peninsula by *N. PECTORALIS*, Horsfield.

**DICLEMUM CHRYSORREUM**, Tem. “River banks, seventy miles above Ava.” Arakan, Tenasserim Provinces, Malayan peninsula.

**D. CRUENTATUM**, (L.) “Thayet Myo.” The most widely diffused of Asiatic species of this genus. I observed it in particular abundance in the vicinity of Mergui; and it is not rare near Calcutta.

**D. MINIMUM** (Tickell): young, *Certhia erythrorhyncha*, Latham. “River banks seventy miles above Ava.” India generally; Ceylon; Burmá; particularly common in the jungle-clad hills about Maulmain.

**CROCOPUS VIRIDIFRONS**, nobis. “Ava.” I never obtained this green pigeon; but *OSMATERON PHAYRII* (p. *antea*) abounded in the forests of upper Martaban, and *O. BICINCTA* is common near Maulmain, with probably *O. PHAYRII* also.

**TURNIX BLANFORDII**, nobis, *n. s.* Like *T. DUTSCHMIERII* of India, but much larger; holding the same relationship to that species which the *T. SYKESI* of India does to the *T. ANDALUSICA* of S. Europe and N. Africa. Col. Phayre had long previously sent a specimen of this race from Arakan. Length of closed wing 4 inches.

**TURNIX OCELLATA** (Scopoli.) Bengal race. “Common in the grass on the top of Pappa hill.” The three Indian species of this genus were obtained in the vicinity of Thayet-myo by Dr. Jerdon.

#### REPTILIA.

Two “shells” of Tortoises. One from Ava is decidedly *EMYS TRIJUGA*, Schweigger, as described and figured in Gray’s *Catalogue of Shield Reptiles* (1855) p. 20 and pl. IV. This species is new to the Society’s museum, though stated to inhabit “ponds at Calcutta.” I

\* The Andamán Oriole agrees best with *O. HORSFIELDI*, Bonap., *Consp. Avinu*.

have hitherto vainly sought for it, however, among the many hundreds of *EMYDES* from this neighbourhood which I have seen in the course of more than twenty years of collecting.\* Length of the Ava specimen, which I consider to be full grown  $9\frac{3}{4}$  in. The young of this species is figured as *E. Belangeri*, Lesson, in the Atlas to Belanger's *Voyage aux Indies Orientalis*; and in the Society's copy of that work, purchased at the sale of the late Dr. H. Walker's library, *E. Belangeri* is identified by that naturalist (in a pencil-note) with *Geomys tricarinata*, nobis (*J. A. S.* XXIV, 714), from Chaibasa, central India; but this is a mistake. I doubt if *EMYS TRICARINATA*, nobis, attains to nearly so large a size as *E. TRIJUGA*, and it is readily distinguished by the uniform yellowish-white colour of the *plastron*, the second, third, fourth and fifth pairs of plates upon which are of about equal size, constituting a strongly marked distinction from *E. trijuga*. The carapace of our only specimen is  $5\frac{1}{4}$  in. long. Another (forwarded many years ago to the India-house museum) was quite similar. The palms and soles of this species are much dilated (or roundly *heeled*, it might be termed), indicating terrene habits (whence I formerly placed it in *GEOMYDA*). Another species which has been confounded with *E. TRIJUGA*, is the *GEOCLEMYS SIBA*, Gray, from Ceylon, of which we possess two specimens presented by Dr. Kelaart.

Mr. Blanford's other Tortoise from "Arakan hills," is the adult of *CYCLEMYS DENTATA*, Gray, *ibid*, p. 42 and pl. XIX.; but with age this species elongates and loses the dentate appearance of the posterior margin, so as to be hardly, if at all, recognisable from Gray's plate. Length of adult  $8\frac{1}{4}$  by  $5\frac{7}{8}$  in.; of another less elongated and retaining the posterior denticulation 8 by 6 in.

In the same collection is also a large skull of *BATAGAR BASKAR*, Gray (*v. TETRONYX LESSONII*, D. and B., &c. &c.).

A common *EMYS* of the southern Tenasserim provinces is the *E. CRASSICOLLIS*, Bell, as figured in Hardwicke's *Ill. Ind. Zool.* This species I designated *E. nigra* in *J. A. S.* XXIV, 713, having mis-

\* The commonest Caleutta species is *E. TECTUM*; next *E. HAMILTONII* and *E. THURJII*; *E. OCELLATA*, D. and B., is much more rare; *E. TENTOETIA* (closely akin to *TECTUM*) belongs to the Indus river-shed, and is very doubtfully Gangetic; *BATAGUR BASKAR*, Gray (*TETRONYX LESSONII*, D. and B.,) is brought abundantly to Caleutta to be eaten by certain classes of natives; *EMYDA PUNCTATA* and *TRIONYX GANGETICUS* are common, and of *CHITRA INDICA* I have obtained one specimen only,

taken, at that time, another species for the true *CRASSICOLLIS*, received from the Batavian Society in 1814. This error is indicated by Dr. Gray in the *Ann. Mag. A. H. XIX*, (1857), p. 343; but he nevertheless enumerates *E. NIGRA* as a distinct race.\* The Javanese species does not appear to be described, and may be named

*E. NUCHALIS*, *n. s.* from the unusual size of its medial nuchal plate, which is of a triangular shape. The next four medial dorsal plates are elongate, quadrangular, sub-hexagonal, the sixth being triangular with apex to the front. Three dorsal ridges conspicuous in the young animal; the lateral placed very high upon the costal plates, almost submarginally. Posterior border very slightly dentate in the young animal; whereas, in the young of *CRASSICOLLIS*, it is strongly dentate. Plastron flat, and laterally angulate; the four principal pairs of sternal plates mostly about equal and nearly quadrate, though in some the second pair are much shorter than broad, and the third pair are correspondingly enlarged. Colour, olive brown, obscurely mottled with darker brown, the lateral angles of carapace and plastron yellowish; the latter is reddish-brown, more or less deeply clouded with black. Head blackish, with yellow line on the eye, meeting its opposite above the nostrils, another yellow line under the eye, a third behind the eye, a fourth bordering the upper jaw, and other yellow markings on the lower jaw: rest of naked parts yellowish infuscated above. Shell of largest specimen  $6\frac{1}{4}$  by  $4\frac{3}{4}$  in. Hab. Java?

In the southern Tenasserim provinces is also found abundantly the *EMYS BERDMORII*, *nobis*, *J. A. S.* XXVII, 281 *v. E. ocellata* apud nos, *J. A. S.* XXII, 645, XXIV, 481, and *Batagur ocellata* apud Gray, *Ann. Mag. A. H. XIX*, (1857), p. 348; but not *B. ocellata*, apud Gray, *Catalogue of Shield Reptiles* (1855), p. 36, which refers to the true *E. OCELLATA*, Dumeril and Bibron, a species which I have only seen from the neighbourhood of Calcutta. The two are very conspicuously distinct, and are not even nearly akin, as members of the same genus. They will, therefore, henceforth stand as *BATAGUR BERDMORII*, *nobis*, from Martaban and southern Burmá; and *B. OCELLATA*, (D. and B.), from Lower Bengal.

\* Dr. Gray in his catalogue of *Shield Reptiles*, notices specimens of *E. CRASSICOLLIS* from "India" and "Ceylon." I doubt these *habitats* exceedingly. An American *C. NIGRA* is also given by Dr. Gray.

In *J. A. S.* XXII, 640, I described a land Tortoise, by the name *Testudo megalopus*, which I now consider to be merely an enormous specimen of *T. STELLATA*, Schweigger; the species inhabiting peninsular India and Ceylon.\* In XXIII, 301, it was recorded that the Rev. Dr. Mason recognised the supposed *megalopus* as the species with which he was most familiar in Burmá; but there is a nearly similar land Tortoise, which would appear to be very common in Lower Pegu, and which I cannot doubt is the species referred to by Dr. Mason. I name it—

**TESTUDO PLATYNOTUS**, nobis, *n. s.* Very similar to *T. STELLATA*; but averaging a larger size, and conspicuously distinguished by being quite flat upon the back; the plates not rising in the centre, and the bosses presenting the appearance of having been ground flat by attrition in all the specimens observed. The radiating marks are also broader and less numerous, in general numbering six only on each vertebral plate, three on each side of the centre, as compared with *T. STELLATA* and *T. GEOMETRICA* (from S. Africa), the carapace is conspicuously broader but not so high; and the species is much more obviously distinct from the two latter, than these are from each other.† Length of largest specimen 11 by  $7\frac{1}{2}$  in., and height of carapace  $4\frac{1}{4}$  in. I have not seen the plastron. The carapaces are used abundantly in the Rangoon bazar for baling out oil from earthen vessels. In each oil dealer's shop there are three or four of them in constant use; but the entire animal is difficult to be obtained, as the Burmáns are so fond of eating them. I was promised specimens of the animal, as a common inhabitant of the province; but did not succeed in procuring one. Three good illustrative carapaces were, however, obtained, showing about the extent of variation; and I had to pay a tolerable price for them.‡

\* *Homopus Burnesii*, nobis, *J. A. S.* XXII, 642,—**TESTUDO HORSFIELDI** Gray, *Catalogue of Shield Reptiles*, (1855) p. 7 and pl. I, *Hab.* Afghanistan (Nipal)? *P. Z. S.* 1861, p. 219).

† In two or three S. African specimens of *T. GEOMETRICA* (*J. A. S.* XIX, 88) the usual small nuchal plate is wanting. This appears never to exist in *T. STELLATA* and *T. PLATYNOTUS*.

‡ It will be convenient here to enumerate the *Testudinata* of the Burmese provinces, so far as hitherto ascertained.

1. **TESTUDO PHAYRIT**, nobis, *J. A. S.* XVII, 560, XXII, 639. *Hab.* Arakan; Tenasserim provinces.

2. **T. ELONGATA**, nobis, *J. A. S.* XXII, 639, XXIV, 712, XXV, 448; Gray, *Ann. Mag. N. H.* XIX, (1857) p. 242. From Arakan to Mergui. This species has bred in my garden, and the young do not possess the lengthened form of the

Five Snakes sent are *CYLINDROPHIS RUFA*, (Schn.), *LYCODON AULICUS*, *DIPSAS CYNODON*, *TROPIDONOTUS UMBRATUS*, and *TR-*

adult (as in *CYCLEMYS DENTATA* and sundry others). It would appear to exhibit a near resemblance, at first sight, to the American *T. TABULATA*. (Vide Gray, *loc. cit.*)

Of course this is the species referred to as *T. ELONGATA*, Gray (!) from Camboja, in *P. Z. S.* 1861, p. 139, (as well, however, may Dr. J. E. Gray refer to *HOMO SAPIENS*, Gray, or *EQ'US CABALLUS*, Gray! I claim the honour—such as it is of having named the three fine Indo-Chinese species of *TESTUDO*, as yet discovered. *Palnam qui meruit ferat*).

3. *T. PLATYNOTUS*, nobis, *ut supra*. Valley of the Irawadi.
4. *EMYS TRIJUGA*, Schweigger; young, *E. BELANGERI*, Lesson. Ava; Bengal (rare); Coromandel coast.
5. *E. CRASSICOLLIS*, Bell; *E. nigra*, nobis, *J. A. S.* XXIV, 713. Tenasserim provinces; Malayan peninsula; Sumatra; Java; Camboja, (*P. Z. S.* 1861, p. 140).

6. *BATAGAR BERDMOREI*, *Emys Berdmorei*, nobis, *J. A. S.* XXVII, 281: *Syn. ut supra*. Sitang and Tenasserim rivers.

7. *B. BASKA*, Gray; *Tetraonyx Lessonii*, D. and B., Gray, *Ann. Mag. N. H.* XIX, (1857), p. 343, common in Lower Bengal; and a large skull now sent from the Irawadi by Mr. W. T. Blanford.

8. *B. DHONGOKA*; *Emys dhongoka*, Gray, Hardw. *Ill. Ind. Zool.*; young, *E. triottarta*, D. and B. An estuary species chiefly, according to my experience; common along the eastern side of the Bay of Bengal and also in the Nerbudda. It is now unfrequently brought to the Maulmein fish-bazar.

9. *CUORA AMBOINENSIS*, Gray; *Testudo amboinensis*, Dandin; *Cistudo amboinensis*, D. and B. Tenasserim provinces; Camboja; Malayan peninsula and Archipelago; Philippine islands.

10. *CYCLEMYS DENTATA*; *Cistudo dentata*, Gray; *Cycl. orbiculata*, Bell; very young, *Tetraonyx affinis*, Cantor. Arakan; Pegu; Martaban; Tenasserim provinces; Malayan peninsula; Java; Borneo.

11. *C. PLATYNOTA*, Gray, (*Catal.* 1855); *Emys platynota*, Gray, Hardw. *Ill. Ind. Zool.*; Cantor, *J. A. S.* XVI, 609; Blyth, *J. A. S.* XXIV, 714. Tenasserim provinces; Malayan peninsula; Sumatra.

12. *PLATYSTERON MEGACEPALUM*, Gray, *P. Z. S.* 1831, p. 106; Hardw. *Ill. Ind. Zool.*; *J. A. S.* XXIV, 481. Sitang river; China. The adult of this animal is still a desideratum in our collection.

13. *EMYDA PUNCTATA*, Gray; *Cryptopus granodus*, D. and B. Very common throughout India; and received from the Sitang valley.

14. *TRIONYX GANGETICUS*, Cuv. India and Malay countries; also received from the Sitang river.

The marine species of the Bay, including *CHITRA INDICA*, Gray, (*Gymnopus lineatus*, D. and B.), are sufficiently well known, and are given in the late Dr. Cantor's Catalogue of Malayan reptiles, *J. A. S.* XVI, pp. 616 to 620. To the list of them, however, Major Tickell has just added *SPHANIS CORIACEA*, (L.)

All of the fourteen species enumerated are illustrated by one or more specimens in the Society's museum; and most of them by a series of successive ages, from youth to maturity.

It is worthy of remark that of three species extremely common in Lower Bengal, viz. *GEOCLEMYS HAMILTONII*, *EMYS THURJII*, and *BATAGUR TECTUM*, and a fourth which has not hitherto been observed elsewhere, viz. *B. OCELLATUS*, (D. and B.), not one appears to inhabit the Burmese countries, so far as hitherto ascertained. They appear rather to be peculiar to the gangetic river-shed, with perhaps also the Brahmaputra; but even the latter is doubtful so far as I have been able to learn.

In the Proceedings of the Zoological Society for 1861, p. 139-40, Dr. Gray gives a list of some reptiles received from Camboja; in which the following

STOLATUS; all from Thayet Myo; and four species of BATRACHIA from near the mouth of the Irawádi are LYMINODYTES ERYTHRÆUS, RANA VITTIGERA, R. RUGULOSA (vide *J. A. S.* XXIV, 722), and BUFO MELANOSTICTUS.

A number of fishes and *Crustacea* are likewise forwarded from different localities; but these I have not the time to examine properly at present. The class of fishes is that to which I devoted especial attention during my late excursion; and I have more to place on record regarding the fishes of Burmá than can be conveniently compressed into an ordinary Report. I will only remark that Mr. Blanford's 'Bream-like fish' from Ava is the *Cyprinus cotis*, B. H., OSTEOPRAMA COTIS apud nos, *J. A. S.* Vol. XXIX. p. 158, which is more emphatically bream-shaped than the Ost. *MICROLEPIS*, nobis, *ibid.* I obtained both species in abundance, and they acquire a considerable size, as I anticipated, the COTIS being the larger of the two, so far as I have seen.

IV. The Rev. C. S. P. Parish, Chaplain, Maulmein. A jar of sundries from Port Blair. When I was at Maulmein towards the close of September last, Mr. Parish was about to visit the Andamáns; and I supplied him with a small jar of spirit, in which he obligingly promised to preserve any small animals that he might be able to procure. He has contributed a few additions to our scanty list of the Andamánean *fauna*, which I distinguish by prefixing an asterisk to their names.

Of mammalia, one ferruginous Bat\* *Cynopterus marginatus*; abundant in all the neighbouring countries.†

species are noted—*GEOCLAMYS MACROCEPHALA*, Gray, *P. Z. S.* 1859, p. 478, t. XXI, and *GEOMYDA SPINOSA*, Gray; there is, also, a *TRIONYX ORNATUS*, Gray, from Camboja, described in *P. Z. S.* 1861, p. 40. *G. MACROCEPHALA* has likewise been received from Siam; also *EMYS SIAMENSIS*, Gray, Gunther, *P. Z. S.* 1860, p. 114.

I observe that my highly esteemed old friend, Prof. Thos. Bell, in his 'History of British Reptiles,' (Introduction, p. xvii, remarks that—"The eggs of the land Tortoises, as well as those of the marine Turtles, are generally round; but those of the fresh-water genera are usually more or less oval or elliptical." Those of *TESTUDO STELLATA* are exceedingly elongated. The eggs of the *TRIONYX* series are quite globular or spherical, as of the marine Turtles; but those of the *EMYS* group, as likewise of the land Tortoises (so far as I have seen), are very much elongated and elliptical.

† On the Barren Island volcano, Mr. Parish found the half-devoured remains of a Rat, probably *MUS ANDAMENSIS*, nobis: the head was wanting, and Mr. Parish did not think the fragment worth preserving; but the Andamanese species is easily recognised from its size, combined with the peculiar character of

Of birds, \*COLLOCALIA NIDIFICA, (Latham), and *HIRUNDO RUSTICA*, L., juv. (*H. gutturalis*, Scopoli.)

Of reptiles, \*GECKO VERUS Merrem; *TRIMESURUS VIRIDIS* (var. *Cantori*), \*LEPTOPHIS ORNATA; \*DIPSAS—? (very young, but of a species unknown to me); *LYCODON AULICUS* (prettily mottled var., young); and \*BUFO MELANOSTICTUS. The last is the first instance of a batrachian having been received from the Andamáns; but it is a very likely species to have been introduced from on board vessels. I have lately had occasion to remark from personal observation how much the small Geckos (*HEMIDACTYLUS*) are conveyed about in boats.

Of fishes, none worthy of remark.

Of crustaceans, *GRAPSUS STRIGOSUS*, (Herbst.); the fine land Crab noticed in *J. A. S.* XXVII, 272; and the common *SQUILLA RAPHIDEA*.

Of mollusks, *CHITOA CUNNINGHAMII*; *PATELLA TESTUDINARIA*; and a small *LIMA*.

(Here it will be convenient to interpolate a brief notice of some novelties from Port Blair, which have lately been received from Lieut.-Col. Tytler, the present Superintendent.)

Col. Tytler has *seen* a small wild *FELIS* on the main island, which, from his description, would seem to approximate the *F. CHAUS* of the neighbouring countries: Dr. Mouat also tells me that he picked up the skull of a small *FELIS*, on the occasion of his visit to the islands which led to the formation of the penal settlement of Port Blair, but that the specimen had been unaccountably lost. Col. Tytler writes—"On the 4th July at 'Aberdeen' I distinctly saw a *FELINE* animal, the size of the European wild cat. This creature walked across the road about 150 yards before me. Its colour was of an uniform light yellow-brown, not unlike the yellow of a *Leopard*, perhaps lighter, but I could see no marks or spots. On Ross Island

its fur. I may remark that on bare lava, upon Barren Island, Mr. Parish observed a beautiful plant in bloom, which proved to be the ordinarily epiphytic orchid, *DENDROBİUM FORMOSUM*, which is very common in the southern Tenasserim provinces. I observed it plentifully upon trees on the alluvial islands in the Tavoy river.

The naturalists attached to the Austrian 'Novara' expedition describe two species of *MIUS* from the Nicobars, as *M. NICOBARIUS* and *M. PALMARUM*: the former of these may prove to be identical with *M. ANDAMENENSIS*. They also describe *PTEROPUS NICOBARIUS* (which is doubtless *Pr. melanotus* of my Mammal Catalogue).

there are several yellow-coloured domestic Cats belonging to the European Naval Brigade here, but these are small, besides which no Cat from Ross Island could swim over to 'Aberdeen'; and where I saw the animal none of the convicts' houses were within half a mile of the place. From the rapid casual view I had of it, I am persuaded that it was a wild animal, and not a stray domestic Cat." This would make a second species of *carnivora* on the Andamáns, the other being the PARADOXURUS of which we possess the skull of an exceedingly aged individual. Col. Tytler further writes—"There is a great abundance of small Bats on the islands," which remain to be identified.

Of birds, Col. Tytler has sent a fine new Hawk—HÆMATORNIS ELGINI, Tytler, *n. s.* Like *H. CHEELA*, (Latham) *undulatus*, Vigors), but of smaller size and much darker colouring, with the occipital feathers less elongated; being further strongly distinguished by the markings of its great alar and caudal feathers. Instead of the broad pale band crossing the tail-feathers of *H. CHEELA*, the new species has a series of three narrow caudal bands, the last subterminal, only  $\frac{1}{2}$  in. broad, and followed by  $\frac{1}{4}$  in. of the black tip (perhaps in the newly moulted plumage there may be slight albescence extreme tips to the tail-feathers). In lieu of the broad whitish bands which predominate on the under surface of the wing in *H. CHEELA*, our present species has very slight and narrow pale cross-bands, the dark colour much predominating; and the white spots on the anterior portion of the inner surface of the wing are a good deal smaller. "Irides yellow. Bill slate-colour, tarsus yellow; claws black. Extreme length 21 in. by  $3\frac{1}{2}$  ft. in extent of wings." Closed wing 14 in.; tail 9 in.; tarse 3 in. "This species," remarks Col. Tytler, "is not uncommon on the main island, where it is seen sitting on the tops of trees. It is more abundant than the *H. CHEELA*."

EURYZONA CANNINGI, Tytler, *n. s.* Most like the Indian bird referred to *EU. CEYLONICA*, (Gme?) but very much larger and finer coloured, with tail proportionally more developed. Entire upper parts and breast, also the lower tail-coverts rich dark ferruginous, nearly approaching to marone; a slight olivaceous tinge about the rump: throat less deep-coloured: the abdominal region, flanks, and tibial plumes, black, with from two to four narrow white bands crossing each feather: under-surface of the wing much the same, but the

great alars are barred with rufous. "Bill yellow, with slight tinge of green: eyes reddish-orange: feet slate green. Length of adult female 13 in. by 21 in. in expanse of wings." Bill to gape  $1\frac{1}{2}$  in.: tarse  $2\frac{1}{4}$  in.: middle toe and claw  $1\frac{7}{8}$  in.: wing  $6\frac{1}{2}$  in.: tail  $3\frac{1}{2}$  in. The only specimen as yet obtained. The name EURYZONA does not so well apply to this species as to its congeners.

The Indian bird hitherto referred to *EU. CEYLONICA* is a recognisably distinct race from the true *CEYLONICA* of Ceylon. The ferruginous colour of the nape does not descend so low on the back, and there is no trace of ferruginous on the wing and tail-feathers. I distinguish it as *EU. AMAUROPTERA*, nobis.\* The distinction is about equivalent to that of *PALUMBUS ELPHINSTONII* of S. India and *P. TORRINGTONII* of Ceylon; or that of *SARCOGRAMMA GOENSIS* of all India and Ceylon, and *S. ATRONUCHALIS*, nobis, of Indo-China and Malasia. This last bird is common at Akyab.

A *DENDROCITTA*, of small size, Col. Tytler describes (but has not yet sent† as—

" *D. BAYLEYI*, Tytler, *n. s.* A new species, not uncommon on the main island. I name it after Mr. Bayley, the Home Secretary to Government. This beautiful little Pie measures  $13\frac{1}{2}$  in. in extreme length with closed wing  $4\frac{3}{4}$  in.; bill to gape 1 in.; and tarsus 1 in. Wings and tail nearly black, with broad white patch on wing; head, neck, and throat, dark brown; back more rufous; belly and vent very rufous or chestnut. Tail with 12 feathers (therefore not a *Cryptocerina*). Bill and feet dark slate-coloured."

A new Snake forwarded by Col. Tytler I designate as—

*TRIPIDONOTUS, TYTLERI*, nobis, *n. s.* Species typical; the head subconical, flattened above, with the inter-orbital plate twice as long as broad at middle, and projecting backward so as to form an equilateral triangle between the fronts of the parietals and beyond the orbita. Colour a bistre-brown above, yellowish-white below, with three to five more or less conspicuous whitish lines on the fore-part of the body, becoming obsolete at about the middle of the length; a transverse dark streak below the eye, and another and broader dark streak

\* The late Prince of Canino referred the *Gallinula rubiginosa*, Tem. (*Rallus fuscus*, L.?) to this division; but it does not belong to it, having much longer toes, and exhibiting other distinctions.

† Since received.—*T. C. J.*

passing obliquely backward so as to cross the angle of the gape. *Scutæ* 138; *scutellæ* 86 pairs; row of scales 19. (Length of adult 2 ft.  $10\frac{1}{2}$  in., of which tail  $10\frac{1}{2}$  in.)

V. W. Theobald, Esq., Jun., of the Indian Geological Survey. A small tin of specimens, containing—

Of mammalia, a skin of *LAGOMYS ROYLII*, Ogilby, from the Bala Pass, "inhabiting also other passes in Tibet,"—and a small *Arvicoline* quadruped, for which I find it necessary to establish a new genus.

*PHAIOMYS*, *nobis*, *n. g.* Similar to *Arvicola*, but more robust, with a well developed thumb and nail to the fore-foot; tail shortish, and densely clad with short adpressed hairs. Upper rodent tusks inconspicuously grooved.

*PH. LEUCURUS*, *nobis*, *n. s.* Length of a female containing six *fætus*,  $6\frac{1}{2}$  in. of which tail  $\frac{1}{4}$  in. of a smaller specimen sent,  $4\frac{1}{2}$  in., of which tail  $1\frac{1}{4}$  in., of hind-foot claws  $\frac{7}{8}$  in. Fur dense, very soft and fine, the surface hue greyish-brown on the upper parts; on the lower parts, feet and tail, white, a little sullied: basal two-thirds or more of the upper fur dark slaty. "Ears rounded, of medium size, rather appressed."

"These Rats," remarks Mr. Theobald, "are very numerous near Lake Chomoriri; but can only be shot, as it is next to impossible to dig them out, their holes ramifying over acres of ground. They must migrate, as the whole ground is sheeted in snow for five months. The pregnant female was obtained on the 4th August.

(In Afghanistan, there is an animal of nearly similar habits which was known to our people as the 'Quetta Mole,' *MYOSPALAX FUSCOCAPILLUS*, *nobis*, *J. A.* . XV, 141; but that is more nearly akin to the true Lemmings.)

From the same locality, Mr. Theobald has sent two males and a female of "a *Viviparous Lizard*," with also an example of the young. It is a *PHRYNOCEPHALUS* with non-prehensile tail, and would seem to be nearly affined to *PHR. OCELLATUS* (Licht), and *PHR. MELANURUS*, Eichwild, briefly noticed by M. M. Dumeril and Bibron (*Hist. Rept.* IV, 516). It is perhaps *PH. TICKELLII*, Gunther (?) noticed in *P. Z. S.* 1860, pp. 167, 173, as inhabiting from 15,200 to 15,300 ft. elevation on the Himalaya. The sexes differ so much that they might well be mistaken for separate species; the female being smaller, and coloured very much like *UROMASTYX HARDWICKII*, but the tail

is variegated with numerous irregular slaty bands, passing to blackish towards and at the tip: lower-parts uniform yellowish-white, except the dusky tail-tip: length  $3\frac{1}{2}$  in., of which tail 2 in. Male  $4\frac{1}{4}$  in. long, of which tail  $2\frac{1}{2}$  in.; extended fore-limb 1 in., and hind-limb  $1\frac{1}{2}$  in.: in both sexes a transverse double fold of skin at the throat. Colour of the male dark olive above, with an obscure dark band along the spine, broken into a series of spots, and a nearly similar row of largish dark spots on either side; these spots are set off each with a circlet of pale specks: limbs and tail banded above, the latter with imperfectly alternating lateral half bands, of a dusky grey colour, passing to blackish on the terminal fourth of the tail underneath; there is a great black abdominal patch, and another on the throat. The lower jaw protrudes distinctly beyond the upper one. Longest toe of the hind-foot conspicuously serrated along its inner edge. These Lizards associate in pairs, and form shallow burrows along lake Chomoriri. As the species is probably undescribed, I shall designate it *Phr. THEOBALDI*, *nobis, n. s.*

From Tibet is also sent *MOCOA SIKIMENSIS*, *nobis, J. A. S. XXII, 652* (previously received from Sikkim and Kashmir); and a small specimen of *LAUDAKIA (?) MELANURA*, *nobis, (J. A. S. XXIII, 738)* ;\* also from Simla a Snake there common, *TROPIDONOTUS PLATYCEPS*, *nobis, J. A. S. XXIII, 297*, which species we have only previously received from Darjiling.

VI. Messrs. Edwards and Water, of Penang. A fine pair of *DRACO FIMBRIATUS*, Kuhl; from the west coast of Sumatra. Also a small *CROCODILUS POROSUS* in spirit; an imperfect example of *SQUILLA MACULATA*; and a fine sea mouse, akin to *APHRODITA*, which we have also received from Port Blair and from the Tenasserim coast.

\* This Lizard, as I am assured by Mr. Theobald, grows to 18 in. long. It is common.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of July, 1862.*

Latitude 22° 33' 1" North. Longitude 88° 20' 34" East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	29.607	.29.675	.29.538	.0.137	83.2	87.6	80.3	7.3
2	.669	.715	.620	.095	85.0	91.2	80.8	10.4
3	.660	.699	.617	.082	81.3	85.6	77.8	7.8
4	.558	.621	.474	.147	82.6	88.0	79.0	9.0
5	.465	.518	.378	.140	83.2	94.0	79.0	15.0
6	<i>Sunday.</i>							
7	.456	.531	.408	.123	82.3	87.8	77.6	10.2
8	.520	.587	.472	.115	83.4	87.0	80.0	7.0
9	.521	.575	.453	.122	84.7	88.6	81.4	7.2
10	.468	.512	.394	.118	83.2	87.6	79.6	8.0
11	.438	.493	.361	.132	83.2	88.8	79.6	9.2
12	.422	.480	.372	.108	82.3	85.0	80.2	4.8
13	<i>Sunday.</i>							
14	.465	.515	.394	.121	82.0	87.0	79.2	7.8
15	.395	.454	.345	.109	81.7	85.0	79.6	5.4
16	.404	.439	.358	.081	81.3	84.2	79.0	5.2
17	.460	.557	.401	.156	79.6	81.6	78.4	3.2
18	.587	.638	.538	.100	83.0	88.0	79.6	8.4
19	.573	.632	.498	.134	83.4	88.4	80.2	8.2
20	<i>Sunday.</i>							
21	.461	.511	.401	.110	83.7	87.6	81.2	6.4
22	.426	.471	.356	.115	85.2	90.9	80.2	10.7
23	.432	.484	.383	.101	84.0	89.0	80.3	8.7
24	.493	.561	.423	.138	83.3	86.8	80.4	6.4
25	.473	.516	.412	.101	84.7	88.4	82.0	6.4
26	.444	.490	.380	.110	84.6	90.6	80.8	9.8
27	<i>Sunday.</i>							
28	.559	.642	.470	.172	81.8	85.2	79.3	5.9
29	.631	.694	.564	.130	84.3	89.8	77.4	12.4
30	.620	.674	.546	.128	85.5	91.4	81.6	9.8
31	.684	.741	.636	.105	83.8	87.8	81.2	6.6

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers, are derived from the twenty-four hourly Observations made during the day.

*Meteorological Observations.**Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of July, 1862.*

Daily Means, &amp;c. of the Observations and of the Hygrometrical elements dependent thereon.—(Continued.)

Date.	Mean Wet Bulb Thermometer.		Dry Bulb above Wet.		Computed Dew Point.		Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°	°	°	°	°				
1	80.2	3.0	78.7	4.5	0.961	10.31	1.58	0.87		
2	81.0	4.0	79.0	6.0	.970	.37	2.16	.83		
3	78.9	2.4	77.7	3.6	.931	.02	1.22	.89		
4	80.0	2.6	78.7	3.9	.961	.33	.35	.88		
5	79.9	3.3	78.2	5.0	.946	.15	.74	.85		
6	Sunday.									
7	79.7	2.6	78.4	3.9	.952	.23	.35	.88		
8	80.8	2.6	79.5	3.9	.986	.57	.39	.88		
9	81.0	3.7	79.1	5.6	.973	.40	2.02	.84		
10	80.1	3.1	78.5	4.7	.955	.25	1.64	.86		
11	80.3	2.9	78.8	4.4	.964	.36	.53	.87		
12	80.0	2.3	78.8	3.5	.964	.36	.22	.90		
13	Sunday.									
14	79.5	2.5	78.2	3.8	.946	.17	.30	.89		
15	79.4	2.3	78.2	3.5	.946	.17	.20	.89		
16	78.8	2.5	77.5	3.8	.925	9.96	.28	.89		
17	77.7	1.9	76.7	2.9	.902	.74	0.95	.91		
18	80.5	2.5	79.2	3.8	.976	10.48	1.34	.89		
19	80.4	3.0	78.9	4.5	.967	.37	.59	.87		
20	Sunday.									
21	80.8	2.9	79.3	4.4	.979	.51	.56	.87		
22	80.9	4.3	78.7	6.5	.961	.26	2.35	.81		
23	81.1	2.6	80.1	3.9	1.005	.75	1.42	.88		
24	80.8	2.5	79.5	3.8	0.986	.57	.36	.89		
25	81.1	3.6	79.3	5.4	.979	.48	.94	.84		
26	81.0	3.6	79.2	5.4	.976	.45	.94	.84		
27	Sunday.									
28	78.9	2.9	77.4	4.4	.922	9.93	.47	.87		
29	80.6	3.7	78.7	5.6	.961	10.29	.99	.84		
30	81.3	4.2	79.2	6.3	.976	.43	2.29	.82		
31	80.2	3.6	78.4	5.4	.952	.21	1.89	.84		

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of July, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
		Inches.	Inches.	Inches.	°	°	°	°
Mid-night.	29.526	29.689	29.405	0.284	81.7	84.8	79.8	5.0
1	.517	.679	.401	.278	81.3	83.6	78.6	5.0
2	.511	.666	.395	.271	81.0	83.4	78.0	5.4
3	.496	.665	.388	.277	80.8	83.0	77.8	5.2
4	.506	.655	.386	.269	80.5	82.6	77.6	5.0
5	.502	.665	.389	.276	80.4	82.2	77.4	4.8
6	.519	.691	.395	.296	80.6	82.6	78.4	4.2
7	.534	.704	.403	.301	81.2	83.0	78.8	4.2
8	.546	.714	.412	.302	82.6	84.8	79.4	5.4
9	.548	.714	.400	.314	83.9	86.6	79.2	7.4
10	.553	.741	.406	.335	84.9	87.8	78.9	8.9
11	.548	.738	.414	.324	85.4	89.8	78.3	11.5
Noon.	.535	.722	.401	.321	86.1	89.7	77.8	11.9
1	.517	.704	.391	.313	86.8	94.0	80.4	13.6
2	.494	.691	.368	.323	86.7	91.4	80.6	10.8
3	.474	.668	.346	.322	86.3	90.9	80.6	10.3
4	.464	.645	.345	.300	85.4	89.2	79.5	9.7
5	.461	.636	.356	.280	84.8	88.6	79.4	9.2
6	.477	.658	.369	.289	83.8	87.8	79.0	8.8
7	.493	.672	.367	.305	83.0	86.8	79.0	7.8
8	.514	.689	.386	.303	82.6	86.6	79.0	7.6
9	.527	.710	.398	.312	82.3	84.6	78.8	5.8
10	.542	.724	.407	.317	82.0	84.4	78.6	5.8
11	.543	.718	.419	.299	81.7	84.0	78.8	6.8

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers, are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of July, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—(Continued.)

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid-night.	79.6	2.1	78.5	3.2	0.955	10.29	1.08	0.91
1	79.3	2.0	78.3	3.0	.949	.22	.02	.91
2	79.1	1.9	78.1	2.9	.943	.16	0.98	.91
3	79.1	1.7	78.2	2.6	.946	.19	.88	.92
4	78.8	1.7	77.9	2.6	.937	.10	.88	.92
5	78.8	1.6	78.0	2.4	.940	.15	.79	.93
6	78.9	1.7	78.0	2.6	.940	.13	.88	.92
7	79.4	1.8	78.5	2.7	.955	.29	.92	.92
8	80.1	2.5	78.8	3.8	.964	.36	1.32	.89
9	80.7	3.2	79.1	4.8	.973	.42	.71	.86
10	81.0	3.9	79.0	5.9	.970	.37	2.12	.83
11	81.1	4.3	78.9	6.5	.967	.32	.36	.81
Noon.	81.4	4.7	79.0	7.1	.970	.35	.60	.80
1	81.9	4.9	79.4	7.4	.983	.47	.74	.79
2	81.8	4.9	79.3	7.4	.979	.44	.74	.79
3	81.6	4.7	79.2	7.1	.976	.41	.61	.80
4	81.1	4.3	78.9	6.5	.967	.32	.36	.81
5	80.7	4.1	78.6	6.2	.958	.26	.20	.82
6	80.3	3.5	78.5	5.3	.955	.25	1.85	.85
7	80.1	2.9	78.6	4.4	.958	.30	.52	.87
8	79.9	2.7	78.5	4.1	.955	.27	.41	.88
9	79.9	2.4	78.7	3.6	.961	.33	.25	.89
10	79.7	2.3	78.5	3.5	.955	.27	.20	.90
11	79.5	2.2	78.4	3.3	.952	.25	.12	.90

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of July, 1862.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	o ...	Inches 0.82	S. & S. E.	Cloudy till 8 P. M. cloudless afterwards ; also raining at 1 A. M. and from 11 A. M. to 2 P. M.
2	124.0	...	S.	Cloudless till 7 A. M. Scatd. $\sim$ i till 5 P. M. Scatd. $\sim$ i & $\sim$ i afterwards.
3	...	1.06	S. & W.	Cloudless till 4 A. M. cloudy afterwards ; also raining between 11 A. M. & 1 P. M.
4	...	...	S. & W.	Cloudy ; also slightly drizzling at 1 A. M. & at 7 & 8 P. M.
5	117.0	1.66	S. & W.	Scatd. clouds till 1 P. M. cloudy afterwards ; also raining between 1 & 2 A. M. & between 6 & 8 P. M.
6	...	...	Sunday.	
7	112.4	1.60	S. & S. E. & S. W.	Cloudy ; also raining between 1 & 5 A. M. & also at 4 P. M.
8	...	0.42	E. & S. & S. E.	Cloudy ; also raining between 1 & 4 A. M. ; also between 8 & 9 A. M. & also between Noon & 1 P. M.
9	124.4	...	S. & S. E.	Scattered clouds till 7 P. M. cloudless afterwards.
10	114.0	0.51	S. & E. & S. E.	Cloudy ; also constantly drizzling.
11	120.0	0.30	S. & S. E. & E.	Cloudy ; also raining between 3 & 5 P. M.
12	...	0.36	W. & S. W. & calm.	Cloudy ; also constantly drizzling.
13	...	0.36	Sunday.	
14	...	0.34	S. W.	Cloudy ; also constantly raining.
15	...	0.12	S. W. & S. & S. E.	Cloudy, also drizzling at Noon, & also between 5 & 7 P. M.
16	...	...	S. W. & S. E.	Cloudy ; also drizzling at 9 A. M. at Noon, & at 11 P. M.
17	...	0.72	S. & S. W.	Cloudy ; also constantly drizzling.
18	...	0.16	S.	Cloudy till 3 A. M. Scatd. $\sim$ i till Noon, cloudy afterwards ; also drizzling at Midnight & 1 A. M. & also between 11 & Noon.
19	...	...	S.	Cloudy.
20	...	...	Sunday.	
21	121.4	0.26	S. E. & S.	Cloudy ; also drizzling between 1 & 2 A. M. & also raining between 11 & Noon.
22	127.8	0.08	N.	Scattered $\sim$ i till 3 P. M. cloudy afterwards ; also slightly drizzling at 8 & 9 P. M.
23	...	2.02	N.	Cloudy ; also raining occasionally.

$\sim$ i Cirri,  $\sim$ i Cirro strati,  $\sim$ i Cumuli,  $\sim$ i Cumulo strati,  $\sim$ i Nimb;  $\sim$ i Stratiformis,  $\sim$ i Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of July, 1862.*

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
24	...	0.17	S. & E.	Cloudy ; till 6 P. M. Scattered $\backslash$ i afterwards ; also raining from Midnight to 3 A. M.
25	...	...	S. & S. E.	Cloudy, till 11 A. M. Scatd. $\cap$ i & $\backslash$ i afterwards ; also slightly drizzling at 9 A. M.
26	...	0.26	S. & E.	Scatd. $\backslash$ i & $\cap$ i till 6 P. M. cloudy afterwards ; also raining at 7 & 8 P. M.
27	...	1.15	<i>Sunday.</i>	Cloudy ; also raining at 7 & 11 A. M. & also at 9 P. M.
28	...	0.40	S. & S. E. & E.	Cloudy till 10 A. M. Scatd. $\backslash$ i & $\backslash$ i afterwards ; also raining at 4 & 5 A. M.
29	123.0	0.34	S. & S. E.	Cloudy till 7 A. M. Scatd. $\cap$ i afterwards.
30	122.0	...	S.	Scatd. clouds ; also slightly raining at 2 & 11 A. M. & also between 1 & 2 P. M.
31	...	0.20	S. & S. E.	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of July, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month,	..	..	29.515
Max. height of the Barometer occurred at 10 A. M. on the 31st,	..	..	29.741
Min. height of the Barometer occurred at 4 P. M. on the 15th,	..	..	29.345
<i>Extreme range</i> of the Barometer during the month,	..	..	0.396
Mean of the daily Max. Pressures,	..	..	29.571
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> ,	..	..	29.452
<i>Mean daily range</i> of the Barometer during the month,	..	..	0.119

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			°
Mean Dry Bulb Thermometer for the month,	..	..	83.2
Max. Temperature occurred at 1 P. M. on the 5th,	..	..	94.0
Min. Temperature occurred at 5 A. M. on the 29th,	..	..	77.4
<i>Extreme range</i> of the Temperature during the month,	..	..	16.6
Mean of the daily Max. Temperature,	..	..	87.9
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> ,	..	..	79.8
<i>Mean daily range</i> of the Temperature during the month,	..	..	8.1

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			°
Mean Wet Bulb Thermometer for the month,	..	..	80.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer,..	..	..	3.0
Computed Mean Dew-point for the month,	..	..	78.7
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..	..	..	4.5
			Inches
Mean Elastic force of Vapour for the month,..	..	..	0.961

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			Troy grains
Mean Weight of Vapour for the month, ..	..	..	10.31
Additional Weight of Vapour required for complete saturation, ..	..	..	1.58
Mean degree of humidity for the month, complete saturation being unity,	..	..	0.87

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			Inches
Rained 26 days, Max. fall of rain during 24 hours, ..	..	..	2.02
Total amount of rain during the month, ..	..	..	13.31
Prevailing direction of the Wind, ..	..	..	S. & S. E.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of July, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Date.	No. of days.												N. W.	Rain on.	Claim.	Rain on.	Missed.
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.					
Midnight.	1	1			3	1	4		12	1	4	2					3
1	1	1			3	2	4	1	14	2	5	3				1	
2	1	1			4	2	4	1	12	3	5	3				2	
3	1	1			4	2	3		11		5	3				3	
4	1	1			3	1	3	1	13		3	3				2	
5	1		1		2		4	1	11	1	6	2				1	
6	1	1	1		2		5		14	1	4					2	
7	1	1	1		2		7		12	2	4					1	
8	1		1		3		5		12	1	1					3	
9	2				6	1	4	2	10	1	2					1	
10	2				3		5	1	14		1					2	
11	1				4		3	2	13	2	2					1	
Noon.	1				3		1		15	4	1					1	
1	1				3	2			15	1	3					1	
2	2				3		4		12	3	3					2	
3	2				2		3		13	1	5					2	
4	2				2		4		11	1	4					1	
5	2		1		1		5	1	13		2					1	
6	2				1		6	1	13	1	4					1	
7	2				1		6	1	13	1	3					1	
8	2				1		4		14	1	3					1	
9	2				1		6		13	1	2					1	
10	2				1		6	1	13		2					1	
11	2				1		6	1	13		2					1	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

Latitude  $22^{\circ} 33' 1''$  North. Longitude  $88^{\circ} 20' 34''$  East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at $32^{\circ}$ Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	Inches, 29.667	Inches, 29.718	Inches, 29.609	.109	° 83.7	° 87.8	° 79.8	° 8.0
2	.597	.652	.532	.120	84.6	87.8	81.4	6.4
3	<i>Sunday.</i>							
4	.570	.639	.515	.124	84.6	87.8	82.8	5.0
5	.575	.633	.514	.119	84.6	88.0	81.7	6.3
6	.530	.586	.460	.126	84.8	88.2	82.4	5.8
7	.476	.525	.405	.120	84.3	90.4	80.0	10.4
8	.483	.546	.418	.128	84.2	91.0	79.8	11.2
9	.489	.543	.417	.126	83.4	88.6	80.2	8.4
10	<i>Sunday.</i>							
11	.554	.610	.491	.116	82.6	87.0	80.2	6.8
12	.533	.583	.462	.121	82.7	87.2	80.0	7.2
13	.547	.601	.503	.098	83.1	88.0	80.0	8.0
14	.556	.599	.495	.104	82.4	86.8	80.5	6.3
15	.490	.568	.393	.175	84.2	89.2	80.2	9.0
16	.390	.453	.312	.141	83.1	87.2	80.6	6.6
17	<i>Sunday.</i>							
18	.424	.506	.365	.141	82.2	86.4	79.8	6.6
19	.508	.576	.460	.116	83.8	89.1	80.0	9.1
20	.548	.594	.488	.106	83.5	87.6	79.8	7.8
21	.565	.624	.502	.122	81.5	83.6	79.0	4.6
22	.581	.633	.522	.111	83.2	85.0	81.8	3.2
23	.562	.602	.513	.089	83.9	87.0	81.6	5.4
24	<i>Sunday.</i>							
25	.562	.610	.525	.085	80.4	83.8	78.6	5.2
26	.566	.622	.503	.119	80.3	84.8	78.0	6.8
27	.539	.596	.486	.110	81.0	85.4	77.0	8.1
28	.515	.552	.467	.085	81.5	83.7	79.8	3.9
29	.557	.604	.510	.094	81.7	85.2	79.2	6.0
30	.639	.704	.581	.123	83.5	87.8	80.6	7.2
31	<i>Sunday.</i>							

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

## Meteorological Observations.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

Daily Means, &c. of the Observations and of the Hygrometric elements  
dependent thereon.—(Continued.)

Date.	Mean Wet Bulb Thermometer.		Dry Bulb above Wet.		Computed Dew Point.		Dry Bulb above Dew Point. °	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°	°	°	Inches.	T. gr.					
1	79.9	3.8	78.0	5.7	0.940	10.07	2.00	0.83			
2	81.0	3.6	79.2	5.4	.976	.45	1.94	.84			
3	Sunday.										
4	81.7	2.9	80.2	4.4	1.008	.79	.60	.87			
5	81.5	3.1	79.9	4.7	0.998	.67	.72	.86			
6	81.6	3.2	80.0	4.8	1.001	.70	.76	.86			
7	81.3	3.0	79.8	4.5	0.995	.64	.64	.87			
8	80.7	3.5	78.9	5.3	.967	.37	.87	.85			
9	80.7	2.7	79.3	4.1	.979	.51	.45	.88			
10	Sunday.										
11	79.7	2.9	78.2	4.4	.946	.17	.51	.87			
12	79.4	3.3	77.7	5.0	.931	.00	.72	.85			
13	80.1	3.0	78.6	4.5	.958	.28	.58	.87			
14	80.1	2.3	78.9	3.5	.967	.39	.22	.90			
15	80.9	3.3	79.2	5.0	.976	.45	.79	.85			
16	80.2	2.9	78.7	4.4	.961	.33	.53	.87			
17	Sunday.										
18	79.0	3.2	77.4	4.8	.922	9.91	.63	.86			
19	79.2	4.6	76.9	6.9	.908	.72	2.38	.80			
20	79.6	3.9	77.6	5.9	.928	.95	.05	.83			
21	79.6	1.9	78.6	2.9	.958	10.32	0.99	.91			
22	80.9	2.3	79.7	3.5	.992	.63	1.26	.89			
23	80.9	3.0	79.4	4.5	.983	.51	.62	.87			
24	Sunday.										
25	78.5	1.9	77.5	2.9	.925	9.98	0.96	.91			
26	77.6	2.7	76.2	4.1	.887	.58	1.33	.88			
27	78.2	2.8	76.8	4.2	.905	.75	.39	.88			
28	79.2	2.3	78.0	3.5	.940	10.11	.20	.89			
29	78.8	2.9	77.3	4.4	.919	9.90	.47	.87			
30	80.3	3.2	78.7	4.8	.961	10.31	.69	.86			
31	Sunday.										

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	o	o	o	o	o
Mid-night.	29.561	29.714	29.393	0.321	81.6	84.2	79.1	5.1
1	.545	.699	.385	.314	81.2	83.8	77.6	6.2
2	.535	.680	.377	.303	80.9	83.7	77.6	6.1
3	.524	.662	.375	.287	80.8	83.6	77.0	6.6
4	.520	.658	.365	.293	80.7	83.6	77.6	6.0
5	.527	.652	.371	.281	80.7	83.4	78.0	5.4
6	.539	.667	.371	.296	80.7	83.6	78.4	5.2
7	.554	.676	.399	.277	81.2	83.4	78.8	4.6
8	.566	.710	.436	.274	82.4	84.6	79.7	4.9
9	.587	.718	.445	.273	83.6	86.4	80.3	6.1
10	.587	.713	.445	.268	84.8	88.0	81.2	6.8
11	.576	.706	.434	.272	85.3	89.4	82.0	7.4
Noon.	.557	.692	.398	.294	85.5	90.0	80.2	9.8
1	.537	.682	.381	.301	86.0	90.4	79.0	11.4
2	.517	.655	.342	.313	85.9	90.6	79.9	10.7
3	.497	.636	.327	.309	85.6	91.0	78.9	12.1
4	.483	.613	.312	.301	85.4	89.4	79.0	10.4
5	.485	.609	.318	.291	84.7	87.8	78.7	9.1
6	.498	.618	.329	.289	83.3	85.8	78.2	7.6
7	.514	.636	.337	.299	82.9	85.0	78.4	6.6
8	.538	.673	.353	.320	82.5	84.6	79.0	5.6
9	.557	.695	.378	.317	82.3	84.6	78.8	5.8
10	.566	.704	.373	.331	82.0	84.4	78.0	6.4
11	.564	.699	.366	.333	81.9	84.6	78.2	6.4

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Hour.	Mean Thermometer.		Dry Bulb above Wet.		Computed Dew Point.		Dry Bulb above Dew Point.		Mean Elastic force of Vapour.		Mean Weight of Va- pour in a Cubic foot of air.		Additional Weight of Vapour required for complete saturation.		Mean degree of Hu- midity, complete satura- tion being unity.		
	o	o	o	o	o	o	o	o	o	o	Troy grs.	Troy grs.	o	o	o	o	o
Mid- night.	79.5	2.1	78.4	3.2	0.952	Inches.	10.25		1.09		0.90						
1	79.2	2.0	78.2	3.0	.946		.19		.02		.91						
2	79.0	1.9	78.0	2.9	.940		.13		.97		.91						
3	79.1	1.7	78.2	2.6	.946		.19		.88		.92						
4	79.0	1.7	78.1	2.6	.943		.16		.88		.92						
5	79.0	1.7	78.1	2.6	.943		.16		.88		.92						
6	79.2	1.5	78.4	2.3	.952		.27		.77		.93						
7	79.4	1.8	78.5	2.7	.955		.29		.92		.92						
8	80.0	2.4	78.8	3.6	.964		.36		1.25		.89						
9	80.4	3.2	78.8	4.8	.964		.34		.69		.86						
10	80.9	3.9	78.9	5.9	.967		.34		2.12		.83						
11	81.1	4.2	79.0	6.3	.970		.37		.27		.82						
Noon.	81.0	4.5	78.7	6.8	.961		.26		.46		.81						
1	81.4	4.6	79.1	6.9	.973		.38		.53		.80						
2	81.2	4.7	78.8	7.1	.964		.29		.58		.80						
3	81.1	4.5	78.8	6.8	.964		.29		.47		.81						
4	81.1	4.3	78.9	6.5	.967		.32		.36		.81						
5	80.6	4.1	78.5	6.2	.955		.23		.19		.82						
6	80.0	3.3	78.3	5.0	.949		.18		1.75		.85						
7	79.7	3.2	78.1	4.8	.943		.12		.67		.86						
8	79.6	2.9	78.1	4.4	.943		.14		.50		.87						
9	79.7	2.6	78.4	3.9	.952		.23		.35		.88						
10	79.7	2.3	78.5	3.5	.955		.27		.20		.90						
11	79.6	2.3	78.4	3.5	.952		.23		.21		.89						

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	111.0	0	Inches	
2	...	...	S. & S. E.	Cloudless till 5 A. M. Seatd. $\text{--i}$ & $\text{--i}$ afterwards.
3	...	0.08	S.	Seatd. clouds ; also raining between 11 & Noon.
4	...	...	Sunday.	
5	...	0.21	S. & S. E.	Cloudy, with raining between Midnight & 2 A. M. & also between 9 & 11 A. M.
6	122.0	...	S. & S. E.	Cloudless till 4 A. M. cloudy afterwards ;
7	121.0	0.42	S. & Calm.	also slightly drizzling between 11 & Noon & between 8 & 9 P. M.
8	112.0	1.28	E. & S.	Cloudy.
9	...	0.75	N. E. & E. & Calm.	Cloudy ; also raining at 6 & 7 A. M. & between 5 & 9 P. M.
10	...	0.45	Sunday.	Cloudy ; also raining at 6 & 7 P. M.
11	...	...	E.	Cloudy ; also raining at 4 A. M. & also drizzling at 9 A. M. & 3 & 5 P. M.
12	...	0.17	E.	Scattered $\text{--i}$ till 5 A. M. elondy afterwards ; also slightly raining between 11 A. M. & Noon.
13	...	...	E.	Cloudy ; also raining between Midnight & 1 A. M. & also between 5 & 6 A. M.
14	...	0.33	E. & S. E.	Seatd. $\text{--i}$ till 4 A. M. Seatd. clouds afterwards ; also slightly drizzling between 10 & 11 A. M. & at 11 P. M.
15	128.8	...	E. & N. & N. E.	Cloudy ; also raining at 7 & 8 A. M. & between Noon & 1 & at 3 P. M.
16	...	0.76	N. E. & N. & E.	Cloudy till 5 A. M. Seatd. $\text{--i}$ & $\text{--i}$ till 4 P. M. cloudy afterwards.
17	...	0.58	Sunday.	Scattered $\text{--i}$ till 3 A. M. elondy afterwards ; also raining at 6 & 9 A. M. & also between 3 & 4 P. M. & between 5 & 6 P. M.
18	...	0.08	S. E. & S.	Cloudy till 7 P. M. eloundless afterwards ; also drizzling at 8 & 9 A. M.
19	128.2	...	S. & S. E.	Cloudless till 6 A. M. Seatd. $\text{--i}$ & $\text{--i}$ till 8 P. M. eloundless afterwards ; also slightly drizzling between 9 & 10 A. M.
20	113.5	...	S. & S. E.	Cloudless till 4 A. M. eloudy till 7 P. M. eloudless afterwards ; also drizzling at Midnight & between 9 & 10 A. M.

$\text{--i}$  Cirri,  $\text{--i}$  Cirro strati,  $\text{--i}$  Cumuli,  $\text{--i}$  Cumulo strati,  $\text{--i}$  Nimbi,  $\text{--i}$  Stratiformis,  $\text{--i}$  Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
				.
21	0	Inches.		
21	...	2.13	S.	Cloudy ; also constantly raining between Midnight & 2 P. M.
22	...	...	S. & S. W.	Cloudless till 5 A. M. cloudy afterwards ; also slightly drizzling at 11 A. M. & Noon.
23	...	0.20	S.	Cloudy ; also raining between 1 & 2 P. M. & drizzling at 5 & 7 P. M.
24	...	...	<i>Sunday.</i>	Cloudy ; also incessantly raining between Midnight & 5 P. M.
25	...	2.69	N. W. & S. E.	Cloudy ; also incessantly drizzling between 3 & 11 P. M.
26	...	0.79	S. & S. W.	Cloudy till 7 P. M. cloudless afterwards ; also drizzling between 1 & 5 A. M. & at 10 A. M.
27	...	0.25	S.	Cloudy ; also raining between 8 & 10 A. M. & drizzling at 9 P. M.
28	...	0.68	S.	Cloudless till 6 A. M. cloudy afterwards ; also drizzling at 9 & 11 A. M. & at 3 & 4 P. M.
29	...	0.11	S.	Seatd. clouds till 5 P. M. cloudless afterwards ; also drizzling at 6, 9, & 11 A. M. & at 1 P. M.
30	...	0.07	S.	
31	...	...	<i>Sunday.</i>	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month, ..	..	..	29.539
Max. height of the Barometer occurred at 9 A. M. on the 1st,	..	..	29.718
Min. height of the Barometer occurred at 4 P. M. on the 16th,	..	..	29.312
<i>Extreme range</i> of the Barometer during the month, ..	..	..	0.406
Mean of the Daily Max. Pressures, ..	..	..	29.595
Ditto ditto Min. ditto, ..	..	..	29.479
<i>Mean daily range</i> of the Barometer during the month, ..	..	..	0.116

			°
Mean Dry Bulb Thermometer for the month, ..	..	..	83.0
Max. Temperature occurred at 3 P. M. on the 8th,	..	..	91.0
Min. Temperature occurred at 3 A. M. on the 27th,	..	..	77.0
<i>Extreme range</i> of the Temperature during the month, ..	..	..	14.0
Mean of the daily Max. Temperature, ..	..	..	87.1
Ditto ditto Min. ditto, ..	..	..	80.2
<i>Mean daily range</i> of the Temperature during the month, ..	..	..	6.9
Mean Wet Bulb Thermometer for the month, ..	..	..	80.0
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	..	..	3.0
Computed Mean Dew-point for the month, ..	..	..	78.5
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..	..	..	4.5

			Inches
Mean Elastic force of Vapour for the month, ..	..	..	0.955

			Troy grains
Mean Weight of Vapour for the month, ..	..	..	10.25
Additional Weight of Vapour required for complete saturation, ..	..	..	1.57
Mean degree of humidity for the month, complete saturation being unity, ..	..	..	0.87

			Inches
Rained 25 days, Max. fall of rain during 24 hours, ..	..	..	2.69
Total amount of rain during the month, ..	..	..	12.03
Prevailing direction of the Wind, ..	..	..	S. & E.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of August, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Hour.	No. of days.												Missed.			
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
Midnight.																
1	1	2	1	5	3	2	11	1	1				2	2	2	2
2	1	2	1	4	3	1	13	2	1				1	1	1	1
3	2	1		3	4	1	11	1	1				2	2	2	2
4	2			5	1	3	10	1	1				1	1	1	3
5	3			5	2	1	13	1	1				1	1	1	1
6	3	1	1	4	1	2	13	2	2	1			1	1	1	1
7	3	1		3	1	5	1	11	2	2	1		1	1	1	1
8	1	2		4	1	3	1	8	3	2			1	1	1	1
9	1	1	5	2	1	6	1	10	5	2			1	1	1	5
10	2	3		2	4	1	11	3	3	2			1	1	1	1
11		5		1	1	4	12	4	4	1						
Noon.																
1		2		3	1	3	12	2	3	2	3	1	1	1	1	1
2		3		4	2	1	10	2	3	1	3		1	1	1	1
3	2	2	1	6	1	1	12	2	3				1	1	1	1
4		2	1	6	1	2	13	2	2				1	1	1	1
5	1	1	3	1	3	4	9	2	1				1	1	1	2
6		2	1	6	1	5	11	1					1	1	1	1
7		1		7	1	4	12	3					1	1	1	1
8		1		6		5	12	1					1	1	1	1
9				7		5	12	3					1	1	1	1
10				7		6	11					1	1	1	1	
11				7	1	6	11	1				1	1	1	1	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

Latitude 22° 33' 1" North. Longitude 88° 20' 34" East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11.

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Tempera- ture during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	Inches. 29.672	Inches. 29.740	Inches. 29.615	Inches. 0.125	° 83.8	° 88.6	° 80.0	° 8.6
2	.699	.748	.641	.107	83.0	88.1	80.4	7.7
3	.724	.772	.666	.106	82.6	88.6	80.0	8.6
4	.731	.779	.679	.100	82.7	88.0	79.6	8.4
5	.770	.824	.710	.114	82.4	88.4	80.2	8.2
6	.796	.851	.710	.141	81.8	86.8	80.4	6.4
7	Sunday.							
8	.725	.809	.625	.184	85.1	90.4	80.2	10.2
9	.694	.763	.623	.140	84.6	89.4	81.4	8.0
10	.655	.726	.568	.158	85.7	91.5	81.3	10.2
11	.642	.690	.577	.113	84.6	90.8	80.1	10.7
12	.656	.707	.617	.090	82.7	85.2	80.8	4.4
13	.707	.768	.658	.110	82.7	88.2	80.2	8.0
14	Sunday.							
15	.700	.768	.625	.143	83.9	89.8	81.0	8.8
16	.731	.782	.682	.100	82.3	86.8	79.9	6.9
17	.724	.786	.655	.131	80.1	85.0	78.8	6.2
18	.713	.767	.661	.106	79.5	84.8	77.8	7.0
19	.746	.796	.701	.095	79.7	83.7	76.2	7.5
20	.787	.854	.731	.123	81.4	86.6	78.6	8.0
21	Sunday.							
22	.811	.880	.739	.141	84.7	89.7	80.2	9.5
23	.723	.792	.632	.160	85.0	92.2	81.4	10.8
24	.622	.694	.537	.157	84.4	91.1	82.0	9.1
25	.576	.640	.491	.149	84.5	91.0	81.2	9.8
26	.577	.629	.528	.101	81.2	87.3	79.2	8.1
27	.615	.683	.545	.138	79.4	81.4	77.8	3.6
28	Sunday.							
29	.783	.854	.720	.134	80.7	84.6	78.0	6.6
30	.739	.826	.649	.177	83.6	89.0	79.6	9.4

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Date.	Mean Wet Bulb Thermometer.		Computed Dew Point.		Dry Bulb above Dew Point.	Inches.	T. gr.	T. gr.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	Dry	Bulb above Wet.	Dry	Bulb							
1	79.8	4.0	77.8	6.0	0.934	10.01	2.09	0.83			
2	79.6	3.4	77.9	5.1	.937	.06	1.76	.85			
3	79.7	2.9	78.2	4.4	.916	.17	.51	.87			
4	79.5	3.2	77.9	4.8	.937	.06	.66	.86			
5	79.6	2.8	78.2	4.2	.946	.17	.44	.88			
6	79.1	2.7	77.7	4.1	.931	.02	.38	.88			
7	Sunday.										
8	80.4	4.7	78.0	7.1	.940	.05	2.52	.80			
9	80.7	3.9	78.7	5.9	.961	.29	.10	.83			
10	81.2	4.5	78.9	6.8	.967	.32	.48	.81			
11	80.8	3.8	78.9	5.7	.967	.34	.05	.84			
12	80.3	2.4	79.1	3.6	.973	.45	1.27	.89			
13	79.9	2.8	78.5	4.2	.955	.27	.45	.88			
14	Sunday.										
15	80.4	3.5	78.6	5.3	.958	.28	.85	.85			
16	79.3	3.0	77.8	4.5	.934	.03	.55	.87			
17	78.1	2.0	77.1	3.0	.913	9.86	0.98	.91			
18	77.6	1.9	76.6	2.9	.899	.71	.95	.91			
19	77.7	2.0	76.7	3.0	.902	.74	.98	.91			
20	78.7	2.7	77.3	4.1	.919	.90	1.37	.88			
21	Sunday.										
22	80.4	4.3	78.2	6.5	.946	10.11	2.31	.81			
23	81.1	3.9	79.1	5.9	.973	.40	.13	.83			
24	81.0	3.4	79.3	5.1	.979	.48	1.83	.85			
25	80.9	3.6	79.1	5.4	.973	.42	.93	.84			
26	78.7	2.5	77.4	3.8	.922	9.93	.28	.89			
27	77.3	2.1	76.2	3.2	.887	.60	.02	.90			
28	Sunday.										
29	78.5	2.2	77.4	3.3	.922	9.95	.09	.90			
30	80.2	3.1	78.5	5.1	.955	10.25	.78	.85			

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
		Inches.	Inches.	Inches.	°	°	°	°
Mid-night.	29.717	29.840	29.563	0.277	81.2	83.8	78.4	5.4
1	.703	.837	.560	.277	80.9	83.8	78.4	5.4
2	.695	.824	.554	.270	80.7	83.4	78.2	5.2
3	.685	.821	.545	.276	80.5	83.2	77.8	5.4
4	.678	.791	.548	.243	80.3	83.0	76.6	6.4
5	.698	.841	.561	.280	80.3	83.0	76.4	6.6
6	.716	.847	.595	.252	80.1	82.8	76.2	6.6
7	.732	.856	.604	.252	80.8	84.0	77.2	6.8
8	.751	.873	.615	.258	82.4	85.4	78.5	6.9
9	.763	.878	.629	.249	83.8	86.8	78.8	8.0
10	.760	.880	.625	.255	84.9	88.0	79.8	8.2
11	.749	.851	.605	.246	86.0	90.4	77.8	12.6
Noon.	.728	.830	.582	.248	86.3	90.8	77.8	13.0
1	.699	.805	.549	.256	86.4	91.1	78.0	13.1
2	.671	.782	.522	.260	85.4	91.8	78.4	13.4
3	.653	.758	.510	.248	85.1	92.2	77.8	14.4
4	.647	.747	.491	.256	84.8	91.8	78.4	13.4
5	.647	.751	.492	.259	83.8	90.0	79.0	11.0
6	.658	.757	.514	.243	82.9	88.4	78.6	9.8
7	.678	.781	.538	.243	82.5	86.8	77.8	9.0
8	.703	.808	.581	.227	82.1	86.0	77.8	8.2
9	.720	.830	.591	.239	81.8	85.8	78.4	7.4
10	.725	.833	.581	.252	81.5	85.2	78.2	7.0
11	.728	.826	.602	.224	81.2	84.4	78.6	5.8

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Hour.	Mean Wet Bulb Ther- mometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Va- pour in a Cubic foot of air.	Additional Weight of Vapour required for complete satis- faction.	Mean degree of Hu- midity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid- night.	79.1	2.1	78.0	3.2	.940	10.13	1.08	0.90
1	79.0	1.9	78.0	2.9	.940	.13	0.97	.91
2	78.9	1.8	78.0	2.7	.940	.13	.91	.92
3	78.8	1.7	77.9	2.6	.937	.10	.88	.92
4	78.5	1.8	77.6	2.7	.928	.01	.90	.92
5	78.7	1.6	77.9	2.4	.937	.12	.79	.93
6	78.6	1.5	77.8	2.3	.934	.09	.75	.93
7	79.1	1.7	78.2	2.6	.946	.19	.88	.92
8	79.8	2.6	78.5	3.9	.955	.27	1.34	.89
9	80.2	3.6	78.4	5.4	.952	.21	.89	.84
10	80.6	4.3	78.4	6.5	.952	.17	2.32	.81
11	80.8	5.2	78.2	7.8	.946	.09	.82	.78
Noon.	80.8	5.5	78.0	8.3	.940	.03	.99	.77
1	80.9	5.5	78.1	8.3	.943	.06	3.00	.77
2	80.5	4.9	78.0	7.4	.940	.05	2.63	.79
3	80.2	4.9	77.7	7.4	.931	9.96	.61	.79
4	80.1	4.7	77.7	7.1	.931	.96	.50	.80
5	79.7	4.1	77.6	6.2	.928	.95	.15	.82
6	79.6	3.3	77.9	5.0	.937	10.06	1.73	.85
7	79.7	2.8	78.3	4.2	.949	.20	.44	.88
8	79.6	2.5	78.3	3.8	.949	.20	.31	.89
9	79.5	2.3	78.3	3.5	.949	.20	.20	.90
10	79.2	2.3	78.0	3.5	.940	.11	.20	.89
11	79.0	2.2	77.9	3.3	.937	.10	.11	.90

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	o	Inches	S. E. & S.	Cloudless till 6 A. M. Scatd. clouds afterwards; also slightly drizzling between 1 & 2 P. M.
1	...	...		
2	122.0	...	S.	Cloudless till 4 A. M. Scatd. clouds afterwards; also slightly drizzling between 5 & 6 P. M.
3	119.6	0.23	S. E. & S.	Cloudless till 5 A. M. Scatd. $\text{\textasciitilde}i$ till 1 P. M. cloudy afterwards; also raining between 1 & 2 P. M.
4	...	0.29	S. & S. E.	Scatd. $\text{\textasciitilde}i$ & $\text{\textasciitilde}i$ till 10 A. M. cloudy afterwards; also raining at 3 P. M.
5	...	0.44	E. & S.	Scatd. $\text{\textasciitilde}i$ & $\text{\textasciitilde}i$ till 3 A. M. cloudy afterwards; also raining at 1 & 3 P. M.
6	...	...	S. & S. E. & S. W.	Cloudy.
7	...	...	Sunday.	
8	130.0	...	S.	Scatd. $\text{\textasciitilde}i$ & $\text{\textasciitilde}i$ ; also very slightly drizzling between 7 & 8 P. M.
9	120.0	...	S.	Scatd. $\text{\textasciitilde}i$ till 10 A. M. Scatd. clouds till 7 P. M. cloudless afterwards.
10	135.0	...	S. W. & S.	Cloudless till 7 A. M. Scatd. $\text{\textasciitilde}i$ & $\text{\textasciitilde}i$ till 6 P. M. cloudless afterwards; also slightly raining at 1 P. M.
11	124.0	1.35	Calm & S. E.	Cloudy; also raining between 4 & 6 P. M.
12	...	...	S. & S. E.	Cloudy; also very slightly drizzling at 11 A. M.
13	...	0.63	S.	Cloudy; also raining at 8 A. M. and also between 1 & 6 P. M.
14	...	0.09	Sunday.	
15	130.5	0.78	S. & E.	Cloudless till 7 A. M. Scatd. $\text{\textasciitilde}i$ & $\text{\textasciitilde}i$ till 6 P. M. cloudless afterwards; also raining between 1 & 3 P. M.
16	126.4	...	S. E.	Cloudless till 2 A. M. Scatd. clouds afterwards; also slightly drizzling between 10 & 11 A. M. and also between 8 & 9 P. M.
17	...	0.22	S. E. & S.	Cloudless till 4 A. M. cloudy afterwards; also raining between 8 & 9 A. M. and also between 11 A. M. & 1 P. M.
18	...	0.32	S. & S. E. & E.	Cloudy; also raining at 6 A. M. Noon 4, 7, & 8 P. M.
19	...	1.25	S. E. & Calm.	Cloudy; also constantly raining.

$\text{\textasciitilde}i$  Cirri,  $\text{\textasciitilde}i$  Cirro strati,  $\text{\textasciitilde}i$  Cumuli,  $\text{\textasciitilde}i$  Cumulo strati,  $\text{\textasciitilde}i$  Nimbi,  $\text{\textasciitilde}i$  Strati,  $\text{\textasciitilde}i$  Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
20	...	0.26	S. E.	Cloudless till 5 A. M. cloudy till 3 P. M. Scatd. $\curvearrowleft$ i afterwards; also raining at 9 A. M. and at Noon.
21	...	...	<i>Sunday.</i>	Cloudless till 6 A. M. Scatd. $\curvearrowleft$ i till 3 P. M. Scatd. $\curvearrowleft$ i till 7 P. M. cloudless afterwards.
22	135.0	...	S. & S. W.	Cloudless till 4 A. M. Scatd. clouds till 6 P. M. cloudless afterwards; also raining at 5 P. M.
23	134.0	0.30	Variable.	Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till Noon, cloudy afterwards; also raining at 1 P. M.
24	136.2	0.29	S. E. & S.	Scatd. $\curvearrowleft$ i & $\curvearrowright$ i; also raining at 1 & 3 P. M.
25	135.0	0.24	N. E. & S. E.	Cloudy till 7 P. M. cloudless afterwards; also raining between 3 & 7 A. M. & also between 2 & 6 P. M.
26	132.0	3.24	N. E. & N. W.	Cloudy; also incessantly raining between 9 A. M. & 9 P. M.
27	...	0.71	N. E. & E.	Cloudless till 3 A. M. cloudy afterwards.
28	...	0.22	<i>Sunday.</i>	Cloudy till 2 P. M. Scatd. $\curvearrowleft$ i & $\curvearrowright$ i afterwards; also drizzling at 2 A. M.
29	...	...	E. & S. E.	
30	...	...	S. & W.	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of September, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month,	..	..	29 704
Max. height of the Barometer occurred at 10 A. M. on the 22nd,	..	..	29.880
Min. height of the Barometer occurred at 4 P. M. on the 25th,	..	..	29.491
<i>Extreme range</i> of the Barometer during the month, ..	..	..	0.389
Mean of the daily Max. Pressures, ..	..	..	29.766
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> , ..	..	..	29.638
<i>Mean daily range</i> of the Barometer during the month, ..	..	..	0.128

			°
Mean Dry Bulb Thermometer for the month, ..	..	..	82.8
Max. Temperature occurred at 3 P. M. on the 23rd, ..	..	..	92.2
Min. Temperature occurred at 6 A. M. on the 19th, ..	..	..	76.2
<i>Extreme range</i> of the Temperature during the month, ..	..	..	16.0
Mean of the daily Max. Temperature, ..	..	..	88.0
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> , ..	..	..	79.9
<i>Mean daily range</i> of the Temperature during the month, ..	..	..	8.1

			°
Mean Wet Bulb Thermometer for the month, ..	..	..	79.6
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	..	..	3.2
Computed Mean Dew-point for the month, ..	..	..	78.0
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..	..	..	4.8
			Inches
Mean Elastic force of Vapour for the month, ..	..	..	0.940

			Troy grains
Mean Weight of Vapour for the month, ..	..	..	10.09
Additional Weight of Vapour required for complete saturation, ..	..	..	1.66
Mean degree of humidity for the month, complete saturation being unity, ..	..	..	0.86

			Inches
Rained 24 days, Max. fall of rain during 24 hours, ..	..	..	3.24
Total amount of rain during the month, ..	..	..	10.86
Prevailing direction of the Wind, ..	..	..	S. & S. E.

*Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of September, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Date.	No. of days.												Calm.	Rain on.	Missed.			
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.			
Midnight.	1	1	1	9	10	1	12	1	13	1	1	1	1	1	2	1	1	1
1	1	1	3	8	2	13									2	2	2	1
2			3	7	1	13									1	1	1	4
3			3	5	1	12									1	1	1	2
4			3	6	1	11									1	1	1	1
5			4	6	1	13	2	1	1						1	1	1	1
6			5	2	13										1	1	1	1
7	3	2	2	4	3	11	1	1	1						1	1	1	4
8	2	2	2	3	4	8	1	1	1						1	1	1	1
9	2	1	2	4	5	1	8	2	1						1	1	1	1
10	1	1	2	5	4	11									1	1	1	1
11	1	1	2	1	2	1	8	1	10	1	2	2	3	2	1	1	1	4
Noon.	1	1	4	1	2	7	1	7	2	2	2	3	1	1	1	2	1	1
2	1	1	3	1	3	8	1	5	1	9	3	2	2	2	2	1	1	1
3	1	1	3	3	1	1	4	1	9	2	5	1	1	1	1	1	1	1
4	1	1	3	3	2	8	1	8	2	2	2	1	1	1	1	1	1	1
5	1	1	3	2	1	9	1	6	1	1	1	1	2	1	1	1	1	1
6	2	2	2	2	2	8	1	7	2	2	2	1	1	1	2	2	1	1
7	2	2	2	1	1	8	1	8	1	1	1	1	1	1	3	3	1	1
8	1	3	1	2	2	8	1	6	1	2	2	1	1	1	1	3	1	1
9	1	3	1	3	3	7	8	7	8	2	2	2	1	1	2	2	1	1
10	1	1	1	4	8	8	7	8	7	2	2	2	1	1	1	1	1	2
11	1	1	1	3	3	8	8	7	8	7	2	2	2	1	1	1	1	2

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

Latitude  $22^{\circ} 33' 1''$  North. Longitude  $88^{\circ} 20' 34''$  East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11.

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at $32^{\circ}$ Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Tempera- ture during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	29.648	29.710	29.570	.140	85.6	90.9	81.2	9.7
2	.627	.689	.572	.117	85.9	90.8	82.2	8.6
3	.674	.758	.623	.135	84.0	89.9	81.0	8.9
4	.641	.735	.572	.163	79.1	83.0	75.0	8.0
5	<i>Sunday.</i>							
6	.608	.683	.558	.125	80.3	84.6	77.0	7.6
7	.709	.773	.649	.124	81.6	86.8	79.9	6.9
8	.777	.841	.713	.128	83.2	88.6	79.0	9.6
9	.778	.845	.697	.148	83.6	90.0	79.6	10.4
10	.755	.822	.694	.128	81.8	86.5	78.6	7.9
11	.763	.830	.708	.122	80.9	87.8	77.0	10.8
12	<i>Sunday.</i>							
13	.799	.866	.725	.141	82.7	88.6	78.8	9.8
14	.792	.845	.723	.122	82.0	88.3	80.2	8.1
15	.755	.845	.702	.143	81.4	85.3	79.0	6.3
16	.767	.835	.711	.124	81.9	87.8	78.0	9.8
17	.798	.868	.734	.134	83.3	89.2	78.8	10.4
18	.817	.893	.752	.141	82.5	86.8	78.5	8.3
19	<i>Sunday.</i>							
20	.864	.923	.801	.122	83.3	88.8	78.9	9.9
21	.860	.917	.801	.116	80.3	86.4	77.5	8.9
22	.792	.864	.742	.122	76.7	80.5	75.2	5.3
23	.636	.738	.535	.203	76.2	77.7	74.6	3.1
24	.563	.669	.481	.188	77.2	80.3	74.8	5.5
25	.733	.799	.662	.137	77.3	82.2	72.8	9.4
26	<i>Sunday.</i>							
27	.809	.863	.749	.114	80.2	86.3	74.8	11.5
28	.869	.928	.807	.121	79.4	86.0	74.4	11.6
29	.936	.986	.884	.102	77.8	84.2	72.0	12.2
30	.959	30.033	.903	.130	77.6	83.7	70.9	12.8
31	.972	.037	.929	.108	79.6	84.9	75.0	9.9

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

*Meteorological Observations.*

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued).

Date.	Mean Wet Bulb Thermo- meter.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Inches.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	T. gr.	T. gr.	Additional Weight of Va- pour required for com- plete saturation.	Mean degree of Humidity, complete saturation be- ing unity.
1 81.5	4.1	79.4	o	6.2	0.983	10.49	2.27	0.82			
2 81.5	4.4	79.3	o	6.6	.979	.44	.43	.81			
3 80.7	3.3	79.0	o	5.0	.970	.40	1.77	.86			
4 77.2	1.9	76.2	o	2.9	.887	9.60	0.93	.91			
5 <i>Sunday.</i>											
6 77.8	2.5	76.5	o	3.8	.896	.67	1.24	.89			
7 79.4	2.2	78.3	o	3.3	.949	10.22	.12	.90			
8 80.4	2.8	79.0	o	4.2	.970	.42	.47	.88			
9 79.5	4.1	77.4	o	6.2	.922	9.89	2.14	.82			
10 78.7	3.1	77.1	o	4.7	.913	.82	1.58	.86			
11 78.1	2.8	76.7	o	4.2	.902	.72	.38	.88			
12 <i>Sunday.</i>											
13 79.6	3.1	78.0	o	4.7	.940	10.09	.63	.86			
14 79.3	2.7	77.9	o	4.1	.937	.08	.39	.88			
15 78.2	3.2	76.6	o	4.8	.899	9.67	.60	.86			
16 78.3	3.6	76.5	o	5.4	.896	.65	.79	.84			
17 78.8	4.5	76.5	o	6.8	.896	.61	2.32	.81			
18 78.4	4.1	76.3	o	6.2	.890	.57	.07	.82			
19 <i>Sunday.</i>											
20 78.2	5.1	75.6	o	7.7	.871	.33	.60	.78			
21 77.3	3.0	75.8	o	4.5	.876	.44	1.47	.87			
22 75.0	1.7	74.1	o	2.6	.830	.02	0.78	.92			
23 74.7	1.5	73.9	o	2.3	.824	8.97	.69	.93			
24 75.4	1.8	74.5	o	2.7	.840	9.12	.83	.92			
25 73.8	3.5	72.0	o	5.3	.776	8.42	1.56	.84			
26 <i>Sunday.</i>											
27 74.5	5.7	71.6	o	8.6	.766	.25	2.63	.76			
28 73.6	5.8	70.7	o	8.7	.744	.03	.59	.76			
29 70.2	7.6	66.4	o	11.4	.646	7.01	3.12	.69			
30 71.8	5.8	68.9	o	8.7	.701	.60	2.47	.76			
31 74.3	5.3	71.6	o	8.0	.766	8.27	.42	.77			

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	°	°	°	°
Mid-night.	29.763	29.969	29.532	0.437	78.7	83.6	70.9	12.7
	.759	.955	.519	.436	78.5	83.4	71.0	12.4
	.753	.950	.493	.457	78.4	83.2	72.6	10.6
	.740	.945	.481	.464	78.5	83.2	73.2	10.0
	.746	.940	.486	.454	77.8	81.6	72.0	9.6
	.753	.957	.496	.461	78.0	82.4	71.7	10.7
	.772	.983	.514	.469	77.9	82.2	72.0	10.2
	.792	30.003	.531	.472	78.4	83.0	73.2	9.8
	.820	.024	.540	.484	80.3	84.6	75.0	9.6
	.828	.037	.584	.453	81.7	86.4	75.6	10.8
	.825	.025	.589	.436	82.8	87.2	75.0	12.2
	.806	.009	.580	.429	84.1	88.6	76.2	12.4
Noon.	.780	29.983	.561	.422	84.8	89.4	76.6	12.8
	.753	.964	.552	.412	85.2	90.8	76.2	14.6
	.728	.940	.544	.396	84.5	90.0	76.8	13.2
	.716	.929	.546	.383	84.1	90.9	76.2	14.7
	.723	.931	.535	.396	84.0	90.8	75.4	15.4
	.730	.940	.574	.366	83.0	89.4	75.2	14.2
	.731	.947	.543	.404	81.5	87.8	75.3	12.5
	.754	.966	.562	.404	80.6	86.0	75.5	10.5
	.771	.987	.571	.416	80.2	86.2	75.5	10.7
	.784	.991	.571	.420	79.9	85.4	75.4	10.0
	.790	.987	.577	.410	79.5	85.0	74.8	10.2
	.790	.988	.564	.424	78.9	84.8	74.6	10.2

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
Mid-night.	0	0	0	0	Inches.	Troy grs.	Troy grs.	
1	76.7	2.0	75.7	3.0	0.873	9.45	0.96	0.91
2	76.5	2.0	75.5	3.0	.868	.40	.95	.91
3	76.5	1.9	75.5	2.9	.868	.40	.91	.91
4	76.7	1.8	75.8	2.7	.876	.48	.87	.92
5	76.0	1.8	75.1	2.7	.857	.28	.85	.92
6	76.2	1.8	75.3	2.7	.862	.34	.85	.92
7	76.1	1.8	75.2	2.7	.860	.31	.85	.92
8	76.5	1.9	75.5	2.9	.868	.40	.91	.91
9	76.9	3.4	75.2	5.1	.860	.28	1.63	.85
10	77.6	4.1	75.5	6.2	.868	.35	2.02	.82
11	77.7	5.1	75.1	7.7	.857	.19	.56	.78
	78.2	5.9	75.2	8.9	.860	.20	3.01	.75
Noon.	78.1	6.7	74.7	10.1	.846	.05	.41	.73
1	78.4	6.8	75.0	10.2	.854	.12	.49	.72
2	77.9	6.6	74.6	9.9	.843	.02	.33	.73
3	77.7	6.4	74.5	9.6	.840	.00	.21	.74
4	77.6	6.4	74.4	9.6	.838	8.97	.20	.74
5	77.9	5.1	75.3	7.7	.862	9.25	2.57	.78
6	77.7	3.8	75.8	5.7	.876	.43	1.88	.83
7	77.6	3.0	76.1	4.5	.885	.53	.48	.87
8	77.5	2.7	76.1	4.1	.885	.55	.33	.88
9	77.4	2.5	76.1	3.8	.885	.55	.23	.89
10	77.1	2.4	75.9	3.6	.879	.49	.17	.89
11	76.7	2.2	75.6	3.3	.871	.42	.05	.90

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	132.4	Inches ...	W. & S. & N. E.	Cloudless till 7 A. M. Scatd. $\curvearrowleft$ i till 6 P. M. cloudless afterwards.
2	134.0	...	W. & S. & S. W.	Scatd. clouds.
3	131.2	0.08	S. W. & W.	Cloudless till 4 A. M. Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till 1 P. M. cloudy afterwards; also raining between 1 & 2 P. M.
4	...	3.83	N. W. & W.	Cloudy; also constantly raining between 7 A. M. & 11 P. M.
5	...	0.15	<i>Sunday.</i>	
6	...	1.03	N. W. & S. E. & S.	Scatd. $\curvearrowleft$ i till 3 A. M.; cloudy till 2 P. M.; Scatd. $\curvearrowleft$ i afterwards; also raining between 8 & 9 A. M. and between 1 & 2 P. M.
7	...	0.10	S. E. & S.	Cloudy; also drizzling at Midnight, 1 A. M. & between 11 A. M. and Noon.
8	...	0.22	S.	Scatd. clouds; also drizzling between 11 and Noon, between 1 & 2, between 4 & 5 and between 7 & 8 P. M.
9	131.0	0.10	S.	Cloudless till 6 A. M. Scatd. clouds afterwards; also slightly raining between 6 & 7 P. M.
10	...	...	S. & E.	Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till 3 A. M.; cloudy till 6 P. M. cloudless afterwards.
11	136.4	...	S. E. & S.	Scatd. $\curvearrowleft$ i till 3 A. M. cloudy afterwards; also slightly drizzling at 1 P. M. & between 2 & 3 P. M.
12	...	1.12	<i>Sunday.</i>	
13	136.0	...	S. E. & S.	Scatd. $\curvearrowleft$ i till 4 A. M.; Scatd. $\curvearrowright$ i till 5 P. M. cloudless afterwards; also foggy between 5 & 7 A. M.
14	148.0	...	S.	Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till Noon; cloudy afterwards; also slightly drizzling at 2, 4 and 5 P. M.
15	...	...	S.	Cloudy till 6 P. M. cloudless afterwards; also slightly drizzling at 4 A. M. & between 2 & 3 P. M.
16	137.0	...	S.	Cloudy till 6 A. M. Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till 3 P. M. cloudy afterwards; also very slightly drizzled at 6 P. M.
17	144.0	...	S. W. & W.	Cloudless till 8 A. M. Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till 6 P. M. cloudless afterwards.
18	142.8	...	S. E. & S. & O. W.	Cloudless till 8 A. M. Scatd. $\curvearrowleft$ i till 5 P. M. cloudless afterwards.
19	...	...	<i>Sunday.</i>	

$\curvearrowleft$ i Cirri,  $\curvearrowright$ i Cirro strati,  $\curvearrowright$ i Cumuli,  $\curvearrowleft$ i Cumulo strati,  $\curvearrowleft$ i Nimbi,  $\curvearrowright$ i Strati,  $\curvearrowleft$ i Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
20	140.7	Inch ...	E. & S. E.	Cloudless till 7 A. M. Scatd. $\backslash$ i & $\cap$ i till 4 P. M. cloudless afterwards.
21	...	0.52	S. & E.	Cloudless till 6 A. M. Scatd. $\backslash$ i till 11 A. M. cloudy afterwards; also raining at 1 & 2 P. M.
22	...	1.02	E. & S. E.	Cloudy; also incessantly raining from 10 A. M. to 11 P. M.
23	...	3.76	E. & S.	Cloudy; also raining the whole day.
24	...	2.47	E. & S.	Cloudy; also raining at Midnight, 1, 6 and 7 A. M.
25	138.5	...	N. W. & N.	Cloudy till 9 A. M. Scatd. $\backslash$ i & $\cap$ i till 6 P. M. cloudless afterwards; also drizzling at 2 & 4 A. M.
26	...	...	<i>Sunday.</i>	Cloudless.
27	144.4	...	S. W. & S. & W.	Cloudless till 11 A. M. Scatd. $\cap$ i till 5 P. M. cloudless afterwards; also foggy at 5 & 6 A. M.
28	146.5	...	S. & N.	Cloudless.
29	147.0	...	N.	Cloudless till 7 A. M. Scatd. $\backslash$ i till 2 P. M. Scatd. $\backslash$ i till 8 P. M. cloudless afterwards.
30	136.2	...	N. W. & N.	Cloudless till 6 A. M. Scatd. $\backslash$ i & $\cap$ i till 3 P. M. cloudless afterwards.
31	141.8	...	N. & W.	

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month,	..	..	29.767
Max. height of the Barometer occurred at 9 A. M. on the 31st,	..	..	30.037
Min. height of the Barometer occurred at 3 A. M. on the 24th,	..	..	29.481
<i>Extreme range</i> of the Barometer during the month,	..	..	0.556
Mean of the daily Max. Pressures,	..	..	29.837
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> ,	..	..	29.704
<i>Mean daily range</i> of the Barometer during the month,	..	..	0.133

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			°
Mean Dry Bulb Thermometer for the month,	..	..	80.9
Max. Temperature occurred at 3 p. m. on the 1st,	..	..	90.9
Min. Temperature occurred at Midnight on the 30th,	..	..	70.9
<i>Extreme range</i> of the Temperature during the month,	..	..	20.0
Mean of the daily Max. Temperature,	..	..	86.1
<i>Ditto</i> <i>ditto</i> Min. <i>ditto</i> ,	..	..	77.2
<i>Mean daily range</i> of the Temperature during the month,	..	..	8.9

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			°
Mean Wet Bulb Thermometer for the month,	..	..	77.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer,	..	..	3.7
Computed Mean Dew-point for the month,	..	..	75.3
Mean Dry Bulb Thermometer above computed Mean Dew-point,	..	..	5.6

			Inches
Mean Elastic force of Vapour for the month, ..	..	..	0.862

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			Troy grains
Mean Weight of Vapour for the month, ..	..	..	9.29
Additional Weight of Vapour required for complete saturation, ..	..	..	1.81
Mean degree of humidity for the month, complete saturation being unity,	..	..	0.84

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			Inches
Rained 17 days, Max. fall of rain during 24 hours, ..	..	..	3.83
Total amount of rain during the month, ..	..	..	14.40
Prevailing direction of the Wind, ..	..	..	S.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of October, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Date.	No. of days.												Missed.						
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.		W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
Midnight.	2				3	2	4		7	1	2			3		2	2	3	1
1	2	1			3	2	4		8	1	3			3		3	1	1	1
2	2	1			2	1	5	5	9	7	3			3		3	1	1	1
3	1	1			2	1	6	5	9	7	3			3		3	1	1	1
4	2	1			2	1	5	5	9	9	2			4		4	1	1	1
5	2	1			2	1	5	5	9	9	1			4		4	1	1	1
6	2	1			2	1	5	5	9	9	1			4		4	1	1	1
7	3	1			3	1	4	4	8	8	1			4		4	1	1	1
8	1				3	1	1	1	8	8	1			5		5	1	1	1
9	3				4	1	1	1	8	8	1			5		5	1	1	1
10	4				4	2	1	1	7	7	1			5		5	1	1	1
11	4				5	1	2	2	6	6	3			4		4	3	3	3
Noon.																			
1	3	1			3	1	2	1	5	5	1			6		1	1	1	1
2	3	1			2	1	4	4	6	6	2			7		1	1	1	1
3	4	1			2	1	3	1	3	3	2			4		4	1	1	1
4	4	1			2	1	5	5	4	4	1			4		4	1	1	1
5	2	1			3	1	6	6	5	5	1			4		4	1	1	1
6	1	1			3	1	5	5	8	8	3			2		2	1	1	1
7	1	1			5	1	4	4	10	8	1			2		2	1	1	1
8	1	1			6	2	2	2	10	10	1			3		3	1	1	1
9	2	1			5	1	1	1	11	11	1			4		4	3	3	3
10	2	1			2	1	1	1	11	11	1			3		3	2	2	2
11	2	1			2	1	1	1	11	11	1			3		3	1	1	1

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

Latitude  $22^{\circ} 33' 1''$  North. Longitude  $88^{\circ} 20' 34''$  East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at $32^{\circ}$ Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	Inches. 29.979	Inches. 30.042	Inches. 29.934	Inches. 0.108	° 79.3	° 85.0	° 75.4	° 9.6
2	<i>Sunday.</i>							
3	.910	29.993	.848	.145	77.7	84.2	72.0	12.2
4	.915	.988	.859	.129	76.4	83.4	71.6	11.8
5	.946	30.028	.902	.126	74.3	82.6	67.8	14.8
6	.903	29.975	.848	.127	73.0	80.2	66.3	13.9
7	.869	.919	.816	.103	73.8	81.0	68.4	12.6
8	.877	.943	.834	.109	74.6	82.0	68.4	13.6
9	<i>Sunday.</i>							
10	.874	.933	.835	.098	75.9	83.2	70.0	13.2
11	.907	.965	.871	.094	75.3	82.3	69.0	13.3
12	.956	30.039	.906	.133	74.9	81.6	69.4	12.2
13	.932	.001	.889	.112	72.8	80.6	65.6	15.0
14	.898	29.973	.847	.126	72.9	81.7	66.0	15.7
15	.924	30.009	.875	.134	73.5	81.8	66.0	15.8
16	<i>Sunday.</i>							
17	.933	.015	.880	.135	72.0	80.0	64.6	15.4
18	.914	29.970	.860	.110	71.9	80.2	64.8	15.4
19	.995	30.066	.939	.127	72.9	81.0	65.6	15.4
20	30.011	.104	.937	.167	73.1	81.0	66.0	15.0
21	29.931	.006	.863	.143	72.3	80.0	66.5	13.5
22	.892	29.951	.832	.119	71.5	80.0	64.2	15.8
23	<i>Sunday.</i>							
24	.895	.960	.845	.115	73.5	81.6	66.2	15.4
25	.937	.997	.885	.112	74.8	83.2	68.4	14.8
26	.955	30.029	.902	.127	73.8	81.6	67.2	14.4
27	.914	29.980	.851	.129	73.6	81.8	66.8	15.0
28	.917	.971	.868	.103	75.1	82.8	69.8	13.0
29	.937	30.019	.889	.130	72.4	79.9	66.2	13.7
30	<i>Sunday.</i>							

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
1	° 73.7	° 5.6	° 70.9	° 8.4	Inches. 0.748	T. gr. 8.10	T. gr. 2.49	0.77
2	<i>Sunday.</i>							
3	71.8	5.9	68.8	8.9	.699	7.57	.53	.75
4	69.1	7.3	65.4	11.0	.626	6.80	.92	.70
5	66.4	7.9	62.4	11.9	.567	.18	.94	.68
6	66.8	6.2	63.7	9.3	.591	.47	.29	.74
7	68.0	5.8	65.1	8.7	.619	.77	.21	.75
8	68.8	5.8	65.9	8.7	.636	.93	.27	.75
9	<i>Sunday.</i>							
10	69.9	6.0	66.9	9.0	.657	7.15	.42	.75
11	68.6	6.7	65.2	10.1	.621	6.77	.63	.72
12	67.9	7.0	64.4	10.5	.605	.59	.69	.71
13	66.2	6.6	62.9	9.9	.576	.30	.41	.72
14	66.7	6.2	63.6	9.3	.590	.45	.28	.74
15	66.7	6.8	63.3	10.2	.584	.38	.52	.72
16	<i>Sunday.</i>							
17	65.3	6.7	61.9	10.1	.557	.11	.39	.72
18	65.9	6.0	62.9	9.0	.576	.31	.17	.74
19	67.1	5.8	64.2	8.7	.601	.57	.16	.75
20	67.3	5.8	64.4	8.7	.605	.62	.17	.75
21	65.5	6.8	62.1	10.2	.561	.14	.44	.72
22	64.3	7.2	60.7	10.8	.536	5.87	.51	.70
23	<i>Sunday.</i>							
24	68.0	5.5	65.2	8.3	.621	6.80	.10	.76
25	68.6	6.2	65.5	9.3	.628	.85	.41	.74
26	67.6	6.2	64.5	9.3	.607	.64	.34	.74
27	67.7	5.9	64.7	8.9	.611	.68	.25	.75
28	68.6	6.5	65.3	9.8	.623	.79	.55	.73
29	65.7	6.7	62.3	10.1	.565	.18	.42	.72
30	<i>Sunday.</i>							

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	°	°	°	°
Mid-night.	29.922	30.041	29.858	0.183	70.5	76.8	67.2	9.6
1	.915	.036	.855	.181	70.1	76.4	67.0	9.4
2	.907	.024	.848	.176	69.6	76.4	66.4	10.0
3	.904	.018	.844	.174	69.2	75.8	65.8	10.0
4	.898	.014	.845	.169	68.6	75.6	65.2	10.4
5	.914	.031	.855	.176	68.5	75.4	65.0	10.4
6	.931	.048	.879	.169	67.9	75.6	64.2	11.4
7	.952	.072	.888	.184	68.3	76.0	64.8	11.2
8	.975	.088	.907	.181	71.9	77.8	67.4	10.4
9	.992	.104	.915	.189	74.3	78.5	71.0	7.5
10	.991	.091	.919	.172	76.5	79.8	73.8	6.0
11	.971	.075	.910	.165	78.4	82.6	75.8	6.8
Noon.	.944	.038	.890	.148	80.0	84.2	78.0	6.2
1	.912	29.998	.858	.140	81.0	84.6	78.9	5.7
2	.890	.969	.838	.131	81.6	85.0	79.9	5.1
3	.882	.959	.830	.129	81.5	84.6	79.4	5.2
4	.879	.953	.816	.137	80.1	83.5	77.4	6.1
5	.883	.961	.824	.137	78.4	82.0	75.2	6.8
6	.893	.981	.832	.149	76.0	81.0	72.4	8.6
7	.912	30.013	.852	.161	74.4	79.6	71.0	8.6
8	.926	.041	.868	.173	73.7	79.0	71.2	7.8
9	.935	.050	.875	.175	72.3	78.0	69.2	8.8
10	.936	.066	.878	.188	71.7	77.6	68.4	9.2
11	.931	.059	.874	.185	71.0	77.4	67.4	10.0

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued.)

Hour.	Mean Wet Bulb Thermometer.			Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o						
Mid-night.	67.4	3.1	65.8	4.7	0.634	6.97	1.16	0.86	
1	66.9	3.2	65.3	4.8	.623	.86	.17	.85	
2	66.6	3.0	65.1	4.5	.619	.82	.08	.86	
3	66.3	2.9	64.8	4.4	.613	.78	.03	.87	
4	65.7	2.9	64.2	4.4	.601	.64	.03	.87	
5	65.8	2.7	64.4	4.1	.605	.69	.96	.88	
6	65.2	2.7	63.6	4.3	.590	.52	.99	.87	
7	65.5	2.8	63.8	4.5	.593	.54	1.06	.86	
8	66.9	5.0	64.4	7.5	.605	.63	.85	.78	
9	67.7	6.6	64.4	9.9	.605	.61	2.51	.73	
10	68.2	8.3	64.9	12.5	.597	.48	3.27	.67	
11	68.2	10.2	63.1	15.3	.580	.28	4.03	.61	
Noon.	68.5	11.5	62.7	17.3	.572	.17	.64	.57	
1	68.5	12.5	62.2	18.8	.563	.05	5.09	.54	
2	68.8	12.8	62.4	19.2	.567	.09	.25	.54	
3	68.8	12.7	62.4	19.1	.567	.09	.22	.54	
4	68.5	11.6	62.7	17.4	.572	.17	4.67	.57	
5	69.0	9.4	61.3	14.1	.603	.53	3.78	.63	
6	69.6	6.4	66.4	9.6	.646	7.03	2.57	.73	
7	69.2	5.2	66.6	7.8	.651	.09	.06	.73	
8	69.1	4.6	66.8	6.9	.655	.16	1.80	.80	
9	68.2	4.1	66.1	6.2	.640	.01	.57	.82	
10	67.9	3.8	66.0	5.7	.638	.00	.43	.83	
11	67.6	3.4	65.9	5.1	.636	6.99	.26	.85	

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.

Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	143.5	Inches. ...	N.	Cloudless till 3 A. M. Seatd. $\setminus$ i till 9 P. M. cloudless afterwards.
2	...	...	<i>Sunday.</i>	Cloudless ; also slightly foggy at 10 & 11 P. M.
3	138.0	...	N. W. & N.	Cloudless ; also slightly foggy between 9 & 11 P. M.
4	141.6	...	N. & N. W.	Cloudless.
5	138.0	...	N. & W.	Cloudless ; also slightly foggy between 9 & 11 P. M.
6	138.0	...	N. W. & N. & S. W.	Cloudless ; also foggy between Midnight & 2 A. M.
7	144.2	...	W. & N.	Cloudless till 11 A. M. Seatd. $\setminus$ i till 3 P. M. cloudless afterwards.
8	139.9	...	S. & N. & S. W.	Cloudless till 9 A. M. Seatd. $\setminus$ i till 2 P. M. cloudless afterwards.
9	...	...	<i>Sunday.</i>	
10	140.0	...	N. W.	Seatd. $\setminus$ i till 3 P. M. cloudless afterwards.
11	141.2	...	N. & N. W.	Cloudless.
12	140.8	...	N.	Cloudless.
13	138.5	...	N.	Cloudless.
14	139.5	...	N.	Cloudless ; also slightly foggy between 7 & 11 P. M.
15	140.0	...	N.	Cloudless.
16	...	...	<i>Sunday.</i>	
17	140.0	...	N. W. & N.	Cloudless ; also foggy at 10 & 11 P. M.
18	137.0	...	N. & N. W.	Cloudless ; also slightly foggy between Midnight & 5 A. M.
19	140.0	...	N. W. & N.	Cloudless.
20	142.5	...	N. & N. W.	Cloudless.
21	137.0	...	W. & N.	Cloudless.
22	139.0	...	N. & S. W.	Cloudless.
23	...	...	<i>Sunday.</i>	
24	141.5	...	N. & W.	Cloudless till 9 A. M. Seatd. $\setminus$ i till 4 P. M. cloudless afterwards.
25	142.8	...	W. & N. W.	Cloudless.
26	137.5	...	W. & N. W.	Cloudless ; also slightly foggy between 7 & 11 P. M.
27	139.0	...	W. & S. W.	Cloudless.
28	140.0	...	N. W. & S. W. & W.	Seatd. $\setminus$ i till 7 A. M. eloudless afterwards.
29	139.9	...	W. & S. & N. W.	Cloudless ; also foggy between 9 & 11 P. M.
30	...	...	<i>Sunday.</i>	

$\setminus$ i Cirri,  $\setminus$ i Cirro strati,  $\setminus$ i Cumuli,  $\setminus$ i Cumulo strati,  $\setminus$ i Nimbi,—i Strati,  $\setminus$ i Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month, ..	..	..	29.925
Max. height of the Barometer occurred at 9 A. M. on the 20th,	..	..	30.104
Min. height of the Barometer occurred at 4 P. M. on the 7th,	..	..	29.816
<i>Extreme range</i> of the Barometer during the month, ..	..	..	0.288
Mean of the Daily Max. Pressures, ..	..	..	29.995
Ditto ditto Min. ditto, ..	..	..	29.873
<i>Mean daily range</i> of the Barometer during the month, ..	..	..	0.122

			°
Mean Dry Bulb Thermometer for the month, ..	..	..	74.1
Max. Temperature occurred at 2 P. M. on the 1st,	..	..	85.0
Min. Temperature occurred at 6 A. M. on the 22nd,	..	..	64.2
<i>Extreme range</i> of the Temperature during the month, ..	..	..	20.8
Mean of the daily Max. Temperature, ..	..	..	81.7
Ditto ditto Min. ditto, ..	..	..	67.7
<i>Mean daily range</i> of the Temperature during the month, ..	..	..	14.0
Mean Wet Bulb Thermometer for the month, ..	..	..	67.7
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	..	..	6.4
Computed Mean Dew-point for the month, ..	..	..	64.5
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..	..	..	9.6

			Inches
Mean Elastic force of Vapour for the month, ..	..	..	0.607

			Troy grains
Mean Weight of Vapour for the month, ..	..	..	6.62
Additional Weight of Vapour required for complete saturation, ..	..	..	2.45
Mean degree of humidity for the month, complete saturation being unity, ..	..	..	0.73

			Inches
Rained No. days, Max. fall of rain during 24 hours, ..	..	..	Nil.
Total amount of rain during the month, ..	..	..	Nil.
Prevailing direction of the Wind, ..	..	..	S. & N. W. & W.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of November, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Hour.	No. of days.												Missed.						
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.	
Midnight.	14										1	5		3					2
1	14										1	7		3					2
2	14										1	8		2					4
3	12										2	8		1					3
4	12										2	6		3					3
5	9										2	6		4					4
6	11										2	6		4					4
7	12										3	5		4					4
8	14										3	5		4					4
9	14	1		1							1	4		3					4
10	8	2		2							1	2		5					4
11	9	1		3							2	6		4					1
Noon.	11										1	6		5					1
1	5	2									1	6		9					1
2	7	1									1	5		10					1
3	6	1									1	7		9					1
4	6	1									1	2		13					1
5	9	1									2	2		10					1
6	9										2	2		10					1
7	10										2	3		9					1
8	10										2	2		9					1
9	10										3	3		8					1
10	10										3	3		9					1
11	11										3	3		8					1



*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of December, 1862.*

Latitude 22° 33' 1" North. Longitude 88° 20' 34" East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11.

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	29.963	30.017	29.909	.018	70.7	79.8	63.0	16.8
2	30.039	.127	.981	.146	69.5	78.6	62.7	15.9
3	.039	.110	.987	.123	67.5	77.0	60.1	16.9
4	.015	.090	.959	.131	68.6	77.4	60.2	17.2
5	29.979	.047	.910	.137	69.3	78.2	62.6	15.6
6	.953	.032	.903	.129	67.9	76.9	61.4	15.5
7	<i>Sunday.</i>							
8	.987	.058	.947	.111	66.3	75.5	58.9	16.6
9	.942	.008	.869	.139	63.6	73.0	55.4	17.6
10	.924	29.986	.865	.121	64.5	74.5	55.4	19.1
11	.967	30.038	.916	.122	65.0	75.8	56.8	19.0
12	.968	.043	.904	.139	65.6	76.0	56.5	19.5
13	.917	29.993	.861	.132	65.6	75.2	56.8	18.4
14	<i>Sunday.</i>							
15	.913	.986	.852	.134	67.3	77.2	59.4	17.8
16	.929	30.000	.872	.128	67.2	76.6	60.0	16.6
17	.936	.005	.876	.129	66.1	75.6	59.0	16.6
18	.879	29.948	.808	.140	65.4	75.9	58.0	17.9
19	.874	.944	.814	.130	67.6	77.5	58.4	19.1
20	.909	.969	.863	.106	67.0	70.0	64.8	5.2
21	<i>Sunday.</i>							
22	.885	.945	.840	.105	66.1	75.1	59.4	15.7
23	.916	.981	.865	.116	64.8	73.3	55.6	17.7
24	.940	30.000	.883	.117	66.8	76.8	58.2	18.6
25	.994	.062	.957	.105	69.6	76.0	63.8	12.2
26	30.024	.082	.976	.106	68.3	71.6	65.6	6.0
27	.004	.093	.930	.163	65.8	72.8	60.2	12.6
28	<i>Sunday.</i>							
29	.038	.123	.974	.149	63.6	72.6	56.8	15.8
30	.028	.098	.956	.142	63.5	73.2	54.8	18.4
31	.070	.143	30.024	.119	63.5	73.4	54.8	18.6

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of December, 1862.*

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued).

Date.	Mean Wet Bulb Thermo- meter.	Dry Bulb above Wet.		Computed Dew Point.		Dry Bulb above Dew Point.		Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Va- pour required for com- plete saturation.	Mean degree of Humidity, complete saturation be- ing unity.
		Dry	Bulb	Bulb	Dew	Point.	Mean Elastic Vapour.			
1	63.9	6.8	60.5	10.2	0.532	5.85	2.33	0.72		
2	62.4	7.1	58.8	10.7	.503	.53	.35	.70		
3	60.5	7.0	56.3	11.2	.462	.11	.31	.69		
4	63.3	5.3	60.6	8.0	.534	.88	1.79	.77		
5	64.2	5.1	61.6	7.7	.552	6.07	.76	.78		
6	62.6	5.3	59.4	8.5	.513	5.66	.85	.75		
7	Sunday.									
8	59.5	6.8	55.4	10.9	.449	4.97	2.18	.70		
9	57.2	6.4	52.7	10.9	.409	.57	.00	.70		
10	58.0	6.5	54.1	10.4	.429	.78	1.98	.71		
11	58.8	6.2	53.1	9.9	.444	.94	.93	.72		
12	59.3	6.3	55.5	10.1	.450	5.00	2.00	.71		
13	60.1	5.2	57.3	8.3	.478	.30	1.70	.76		
14	Sunday.									
15	61.5	5.8	58.0	9.3	.489	.41	.96	.73		
16	60.0	7.2	55.7	11.5	.453	.01	2.31	.68		
17	59.1	7.0	54.9	11.2	.441	4.89	.21	.69		
18	58.2	7.2	53.9	11.5	.426	.73	.22	.68		
19	61.3	6.3	57.5	10.1	.481	5.32	.12	.72		
20	62.2	4.8	59.3	7.7	.511	.65	1.65	.77		
21	Sunday.									
22	59.5	6.6	55.5	10.6	.450	4.99	2.11	.70		
23	58.1	6.7	54.1	10.7	.429	.77	.06	.70		
24	60.9	5.9	57.4	9.4	.480	5.31	1.95	.73		
25	61.7	7.9	57.7	11.9	.485	.33	2.57	.68		
26	61.1	7.2	56.8	11.5	.470	.18	.42	.68		
27	61.3	4.5	58.6	7.2	.499	.54	1.50	.79		
28	Sunday.									
29	56.3	7.3	51.2	12.4	.389	4.34	2.23	.66		
30	56.4	7.1	51.4	12.1	.392	.37	.18	.67		
31	57.6	5.9	53.5	10.0	.421	.69	.86	.72		

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of December, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Tempera- ture for each hour during the month.			
	Mean Height of the Barometer at 32° Fahr.	Max.	Min.		Max.	Min.	Diff.	
		Inches.	Inches.			o	o	
Mid-night.	29.968	30.063	29.876	0.187	62.8	68.4	58.4	10.0
1	.961	.057	.868	.189	62.3	67.8	58.0	9.8
2	.952	.049	.857	.192	61.7	67.4	57.7	9.7
3	.944	.039	.855	.184	61.1	67.0	57.0	10.0
4	.945	.033	.858	.175	60.8	66.6	56.0	10.6
5	.953	.037	.856	.181	60.2	66.0	55.6	10.4
6	.962	.051	.874	.177	59.5	66.0	55.0	11.0
7	.985	.075	.894	.181	59.4	65.8	54.8	11.0
8	30.010	.105	.919	.186	62.8	67.6	58.4	9.2
9	.030	.127	.944	.183	64.8	70.6	58.0	12.6
10	.032	.143	.931	.212	67.8	73.4	62.2	11.2
11	.012	.123	.907	.216	70.8	76.4	65.6	10.8
Noon.	29.981	.100	.884	.216	72.8	77.8	68.2	9.6
1	.951	.073	.847	.226	74.3	79.8	69.8	10.0
2	.926	.049	.827	.222	75.2	79.4	69.6	9.8
3	.914	.024	.814	.210	75.1	79.0	70.0	9.0
4	.912	.025	.810	.215	73.8	77.8	69.4	8.4
5	.919	.032	.808	.224	71.9	75.6	68.3	7.3
6	.930	.038	.837	.201	69.5	72.7	66.2	6.5
7	.948	.059	.851	.208	67.7	71.7	64.0	7.7
8	.966	.093	.872	.221	66.5	70.7	62.8	7.9
9	.983	.106	.896	.210	65.4	69.8	60.8	9.0
10	.983	.118	.884	.234	64.3	69.4	60.2	9.2
11	.978	.116	.878	.238	63.5	68.2	59.8	8.4

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1862.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—(Continued.)

Hour.	Mean Wet Bulb Thermometer.		Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Troy grs.	Troy grs.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°								
Mid-night.	59.1	3.7	56.5	6.3	0.465	5.20	1.21	0.81		
1	58.7	3.6	56.2	6.1	.461	.15	.16	.82		
2	58.0	3.7	55.4	6.3	.449	.02	.17	.81		
3	57.4	3.7	54.1	6.7	.434	4.85	.23	.80		
4	57.2	3.6	54.3	6.5	.432	.84	.18	.80		
5	56.8	3.4	54.1	6.1	.429	.82	.09	.82		
6	56.2	3.3	53.6	5.9	.422	.74	.04	.82		
7	56.1	3.3	53.5	5.9	.421	.73	.03	.82		
8	57.4	5.4	53.6	9.2	.422	.71	.70	.74		
9	58.8	6.0	55.2	9.6	.445	.95	.88	.73		
10	60.2	7.6	55.6	12.2	.452	5.00	2.48	.67		
11	61.5	9.3	56.8	14.0	.470	.16	3.04	.63		
Noon.	62.3	10.5	57.0	15.8	.473	.17	.54	.59		
1	62.8	11.5	57.0	17.3	.473	.16	.96	.57		
2	63.3	11.9	57.3	17.9	.478	.20	4.17	.56		
3	63.0	12.1	56.9	18.2	.472	.13	.21	.55		
4	62.8	11.0	57.3	16.5	.478	.21	3.77	.58		
5	63.1	8.8	58.7	13.2	.501	.49	2.99	.65		
6	63.1	6.4	59.9	9.6	.521	.73	.15	.73		
7	62.4	5.3	59.2	8.5	.509	.63	1.83	.76		
8	61.7	4.8	58.8	7.7	.503	.56	.63	.77		
9	61.0	4.4	58.4	7.0	.496	.50	.45	.79		
10	60.4	3.9	57.7	6.6	.485	.38	.34	.80		
11	59.8	3.7	57.2	6.3	.476	.31	.24	.81		

All the Hygrometrical elements are computed by the Greenwich Constants.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of December, 1862.*

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	139.0	Inches ...	N. W. & N. & W.	Cloudless; also slightly foggy from Midnight to 5 A. M. & also after 9 P. M.
2	134.8	...	N.	Cloudless; also slightly foggy after 8 P. M.
3	135.8	...	N.	Cloudless; also slightly foggy after 8 P. M.
4	136.0	...	N. W. & N.	Cloudless till 11 A. M. Scatd. $\setminus$ i & $\setminus$ i till 5 P. M. cloudless afterwards.
5	137.4	...	W. & N.	Cloudless.
6	134.0	...	W. & N. E. & N. W.	Cloudless.
7	...	...	Sunday.	Cloudless.
8	132.0	...	N. & N. W.	Cloudless.
9	133.0	...	N. W. & N.	Cloudless.
10	136.4	...	N.	Cloudless; also slightly foggy from 8 to 10 P. M.
11	137.0	...	N.	Cloudless; also foggy after 9 P. M.
12	138.0	...	N. & N. W.	Cloudless; also slightly foggy from Midnight to 6 A. M. & also after 8 P. M.
13	131.4	...	N.	Cloudless; also foggy at Midnight and 1 A. M.
14	...	...	Sunday.	
15	127.4	...	N.	Cloudless.
16	131.0	...	N. & N. W.	Cloudless.
17	137.0	...	N. & N. W.	Cloudless.
18	134.8	...	N.	Cloudless.
19	134.0	...	N.	Cloudless till 1 P. M. cloudy afterwards.
20	...	...	S. W. & N. & N. W.	Scatd. $\setminus$ i till 3 A. M. cloudy afterwards; also drizzled at 7 P. M.
21	...	...	Sunday.	
22	137.2	...	N.	Cloudless; also foggy from Midnight to 2 A. M.
23	134.0	...	N.	Cloudless till 2 P. M. Scatd. $\setminus$ i afterwards.
24	137.0	...	N.	Cloudless.
25	135.0	...	N. W. & N.	Cloudy.
26	...	...	N. & N. W.	Cloudy; also drizzling at 5, 7 & 8 P. M.
27	...	0.20	N. & N. W.	Cloudy till 5 P. M. cloudless afterwards; also drizzling from 1 to 7 A. M. also foggy after 7 P. M.
28	...	...	Sunday.	
29	132.0	...	E. & N. & N. W.	Cloudless; also foggy after 7 P. M.
30	130.0	...	N. & N. E.	Cloudless.
31	131.7	...	N.	Cloudless.

$\setminus$ i Cirri,  $\setminus$ i Cirro strati,  $\setminus$ i Cumuli,  $\setminus$ i Cumulo strati,  $\setminus$ i Nimbi,  $\setminus$ i Strati,  $\setminus$ i Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1862.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month,	..	..	29 964
Max. height of the Barometer occurred at 10 A. M. on the 31st,	..	..	30.143
Min. height of the Barometer occurred at 5 P. M. on the 18th,	..	..	29.808
<i>Extreme range</i> of the Barometer during the month,	..	..	0.335
Mean of the daily Max. Pressures,	..	..	30.034
Ditto ditto Min. ditto,	..	..	29.907
<i>Mean daily range</i> of the Barometer during the month, ..	..	..	0.127

			°
Mean Dry Bulb Thermometer for the month,	..	..	66.5
Max. Temperature occurred at 1 P. M. on the 1st,	..	..	79.8
Min. Temperature occurred at 7 A. M. on the 30th and 31st,	..	..	54.8
<i>Extreme range</i> of the Temperature during the month, ..	..	..	25.0
Mean of the daily Max. Temperature,	..	..	75.4
Ditto ditto Min. ditto,	..	..	59.2
<i>Mean daily range</i> of the Temperature during the month, ..	..	..	16.2

			°
Mean Wet Bulb Thermometer for the month,	..	..	60.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer,..	..	..	6.3
Computed Mean Dew-point for the month,	..	..	56.4
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..	..	..	10.1
			Inches
Mean Elastic force of Vapour for the month,..	..	..	0.464

			Troy grains
Mean Weight of Vapour for the month, ..	..	..	5.14
Additional Weight of Vapour required for complete saturation, ..	..	..	2.05
Mean degree of humidity for the month, complete saturation being unity, ..	..	..	0.72

			Inches
Rained 3 days, Max. fall of rain during 24 hours, ..	..	..	0.20
Total amount of rain during the month, ..	..	..	0.20
Prevailing direction of the Wind, ..	..	..	N. & N. W.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of December, 1862.*

## MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.



*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

Latitude 22° 33' 1" North. Longitude 88° 20' 34" East.

Feet.

Height of the Cistern of the Standard Barometer above the Sea-level, 18.11.

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Tempera- ture during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
1	Inches. 30.060	Inches. 30.135	Inches. 29.985	Inches. .150	° 68.5	° 79.6	° 59.3	° 20.3
2	.039	.113	.985	.128	70.3	79.9	61.8	18.1
3	.050	.134	.991	.143	69.7	78.5	63.8	14.7
4	<i>Sunday.</i>							
5	.057	.151	.989	.162	66.6	75.4	59.6	15.8
6	.009	.077	.955	.122	65.2	74.0	57.4	16.6
7	.042	.128	.994	.134	65.3	75.8	57.2	18.6
8	.047	.123	.984	.139	65.5	76.0	56.4	19.6
9	.042	.113	.998	.115	65.2	76.4	58.0	18.4
10	.073	.165	30.019	.146	65.3	74.0	58.3	15.7
11	<i>Sunday.</i>							
12	.068	.158	.006	.152	63.8	75.1	54.9	20.2
13	29.996	.072	29.919	.153	65.0	76.2	54.8	21.4
14	30.012	.072	.954	.118	68.6	78.4	59.8	18.6
15	.051	.138	30.008	.130	67.3	76.4	60.8	15.6
16	.035	.122	29.978	.144	68.9	79.4	59.8	19.6
17	.028	.090	.981	.109	67.5	71.0	64.4	6.6
18	<i>Sunday.</i>							
19	.070	.153	30.013	.140	68.9	78.4	60.0	18.4
20	.051	.142	29.995	.147	68.6	76.4	62.4	14.0
21	.042	.101	.997	.104	70.6	78.8	63.3	15.5
22	.103	.164	30.050	.114	70.7	79.5	62.3	17.2
23	.027	.104	29.953	.151	71.2	79.6	63.0	16.6
24	29.991	.051	.938	.113	69.0	74.3	64.6	9.7
25	<i>Sunday.</i>							
26	30.105	.189	30.043	.146	67.9	76.4	60.2	16.2
27	.086	.177	.019	.158	65.6	75.2	59.0	16.2
28	.032	.120	29.964	.156	65.5	75.2	56.4	18.8
29	.031	.102	.982	.120	65.2	75.2	56.2	19.0
30	.009	.099	.922	.177	65.4	76.6	55.5	21.1
31	.006	.074	.950	.124	65.5	74.6	57.6	17.0

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

*Meteorological Observations.*

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

Daily Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued).

Date.	Mean meter.	Wet Bulb Thermo-	Dry Bulb above Wet.		Dry Point.	Bulb above Dew Point.	Mean Vapour.	Weight of Vapour in a Cubic foot of air.	T. gr.	T. gr.	Mean degree of Humidity, complete saturation be- ing unity.
			Dry Bulb above Wet.	Computed Dew Point.							
1	61.9	6.6	56.6	11.9	0.467	5.15	2.50	0.67			
2	63.3	7.0	57.7	12.6	.485	.32	.76	.66			
3	63.1	6.6	57.8	11.9	.486	.35	.58	.68			
4	<i>Sunday.</i>										
5	60.0	6.6	54.7	11.9	.438	4.85	.36	.67			
6	58.9	6.3	53.9	11.3	.426	.74	.17	.69			
7	58.9	6.4	53.8	11.5	.425	.71	.22	.68			
8	59.0	6.5	53.8	11.7	.425	.71	.27	.68			
9	59.2	6.0	54.4	10.8	.434	.81	.10	.70			
10	58.4	6.9	52.9	12.4	.412	.59	.34	.66			
11	<i>Sunday.</i>										
12	57.3	6.5	51.4	12.4	.392	.37	.24	.66			
13	58.9	6.1	54.0	11.0	.428	.75	.12	.69			
14	63.8	4.8	60.0	8.6	.523	5.76	1.91	.75			
15	63.4	3.9	60.3	7.0	.528	.85	.52	.79			
16	63.3	5.6	58.8	10.1	.503	.54	2.20	.72			
17	64.3	3.2	61.7	5.8	.554	6.12	1.30	.83			
18	<i>Sunday.</i>										
19	62.3	6.6	57.0	11.9	.473	5.21	2.53	.67			
20	65.0	3.6	62.1	6.5	.561	6.18	1.49	.81			
21	64.1	6.5	58.9	11.7	.504	5.53	2.62	.68			
22	64.2	6.5	59.0	11.7	.506	.55	.63	.68			
23	65.9	5.3	61.7	9.5	.554	6.07	.23	.73			
24	63.3	5.7	58.7	10.3	.501	5.53	.23	.71			
25	<i>Sunday.</i>										
26	61.0	6.9	55.5	12.4	.450	4.98	.53	.66			
27	59.0	6.6	53.7	11.9	.423	.70	.30	.67			
28	58.6	6.9	53.1	12.4	.415	.62	.36	.66			
29	58.2	7.0	52.6	12.6	.408	.53	.38	.66			
30	58.5	6.9	53.0	12.4	.414	.60	.35	.66			
31	59.4	6.1	54.5	11.0	.435	.83	.15	.69			

All the Hygrometrical elements are computed by the Greenwich Constants.

From the 1st January 1863, the Greenwich New Factors have been used  
for, computing Dew-point.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.

Hour.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Tempera- ture for each hour during the month.			
	Mean Height of the Barometer at 32° Faht. Inches.	Max.	Min.		Max.	Min.	Diff.	
Mid- night.	30.043	30.104	29.951	0.153	63.5	68.6	58.6	10.0
1	.039	.101	.944	.157	62.7	68.2	58.0	10.2
2	.031	.095	.938	.157	62.1	67.5	57.4	10.1
3	.025	.086	.938	.148	61.6	66.8	57.0	9.8
4	.021	.084	.955	.129	61.2	66.2	56.0	10.2
5	.027	.086	.969	.117	59.9	65.6	55.6	10.0
6	.044	.105	.954	.151	59.9	65.0	55.1	9.9
7	.065	.134	.992	.142	59.6	64.8	54.8	10.0
8	.097	.157	30.024	.133	63.0	67.4	59.0	8.4
9	.113	.174	.047	.127	65.5	69.6	62.6	7.0
10	.120	.189	.051	.138	68.4	72.2	65.4	6.8
11	.100	.181	.033	.148	71.3	74.9	68.4	6.5
Noon.	.072	.152	.010	.142	73.6	78.2	70.2	8.0
1	.040	.112	29.983	.129	74.9	79.4	70.4	9.0
2	.016	.098	.964	.134	76.0	79.6	70.4	9.2
3	29.998	.085	.933	.152	76.5	79.9	71.0	8.9
4	.991	.067	.928	.139	75.3	79.2	71.0	8.2
5	.996	.090	.922	.168	73.0	76.6	69.4	7.2
6	30.001	.095	.919	.176	70.9	75.2	66.8	8.4
7	.014	.111	.933	.178	69.1	73.4	64.8	8.6
8	.032	.118	.972	.146	67.9	72.1	63.4	8.7
9	.043	.120	.968	.152	66.7	71.4	62.2	9.2
10	.048	.119	.962	.157	65.6	70.4	60.8	9.6
11	.047	.110	.953	.157	64.6	69.3	59.6	9.7

The Mean Height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

Hourly Means, &c. of the Observations and of the Hygrometrical elements  
dependent thereon.—(Continued).

Hour.	Mean Wet Bulb Thermometer.		Computed Dew Point.	Dry Bulb above Dew Point.	Inches.	Troy grs.	Troy grs.	Mean Weight of Vapour in a Cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o								
Midnight.	60.1	3.4	57.0	6.5	0.473	5.27	1.28	0.81		
1	59.3	3.4	56.2	6.5	.461	.14	.25	.80		
2	58.8	3.3	55.8	6.3	.455	.09	.18	.81		
3	58.5	3.1	55.7	5.9	.453	.07	.10	.82		
4	58.1	3.1	55.3	5.9	.447	.01	.09	.82		
5	56.9	3.0	54.2	5.7	.431	4.83	.02	.83		
6	57.0	2.9	54.4	5.5	.434	.86	0.99	.83		
7	56.8	2.8	54.3	5.3	.432	.86	.94	.84		
8	58.6	4.4	54.6	8.4	.437	.88	1.57	.76		
9	60.0	5.5	55.6	9.9	.452	5.02	.96	.72		
10	61.4	7.0	55.8	12.6	.455	.02	2.60	.66		
11	62.8	8.5	56.0	15.3	.458	.02	3.31	.60		
Noon.	63.4	10.2	56.3	17.3	.462	.05	.88	.57		
1	64.1	10.8	56.5	18.4	.465	.07	4.21	.55		
2	64.4	11.6	56.3	19.7	.462	.02	.58	.52		
3	64.6	11.9	56.3	20.2	.463	.02	.73	.52		
4	64.1	11.2	56.3	19.0	.462	.03	.37	.54		
5	64.2	8.8	57.2	15.8	.476	.20	3.56	.59		
6	64.4	6.5	59.2	11.7	.509	5.59	2.64	.68		
7	63.6	5.5	59.2	9.9	.509	.62	.16	.72		
8	62.9	5.0	58.9	9.0	.504	.57	1.94	.74		
9	62.3	4.4	58.8	7.9	.503	.56	.67	.77		
10	61.6	4.0	58.4	7.2	.496	.50	.50	.79		
11	61.1	3.5	58.3	6.3	.494	.49	.29	.81		

All the Hygrometrical elements are computed by the Greenwich Constants.  
From the 1st January 1863, the Greenwich New Factors have been used  
for, computing Dew-point.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

## Solar Radiation, Weather, &amp;c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
1	139.6	Inches		
2	140.9	...	N.	Cloudless till 4 P. M. Scatd. $\curvearrowleft$ i afterwards.
3	134.0	...	N.	Scatd. $\curvearrowleft$ i till 10 A. M. cloudless till 5 P. M. Scatd. $\curvearrowleft$ i afterwards.
4	...	...	<i>Sunday.</i>	Scatd. $\curvearrowleft$ i till 7 A. M. cloudless afterwards; also slightly foggy after 8 P. M.
5	134.0	...	N.	Cloudless.
6	129.0	...	N.	Cloudless; also slightly foggy after 7 P. M.
7	131.0	...	N.	Cloudless; also slightly foggy after 9 P. M.
8	134.0	...	N.	Cloudless; also foggy between Midnight & 7 A. M.
9	134.0	...	N.	Cloudless.
10	139.0	...	N. & W.	Cloudless.
11	...	...	<i>Sunday.</i>	
12	133.4	...	N. & N. W.	Cloudless.
13	134.0	...	S. & N.	Cloudless till 5 A. M. Scatd. $\curvearrowleft$ i and $\curvearrowright$ i till 1 P. M. cloudless afterwards.
14	132.0	...	S. & N. & S. W.	Cloudless till 7 A. M. Scatd. $\curvearrowleft$ i and $\curvearrowright$ i till 3 P. M. cloudless afterwards.
15	126.2	...	S. & E.	Cloudless till 10 A. M. Scatd. $\curvearrowleft$ i till 2 P. M. cloudless afterwards; also foggy between 4 & 7 A. M.
16	134.0	...	N. & S.	Cloudless; also foggy between 4 and 7 A. M.
17	...	...	S. & N. W.	Scatd. $\curvearrowleft$ i till 5 A. M. cloudy till 7 P. M. Scatd. $\curvearrowleft$ i afterwards; also slightly drizzled at 3 P. M.
18	...	...	<i>Sunday.</i>	Cloudless.
19	134.0	...	N. & S. W. & E.	Cloudless till 7 A. M. Scatd. $\curvearrowleft$ i till 4 P. M. cloudless afterwards.
20	121.2	...	S. & S. W.	Scatd. $\curvearrowleft$ i & $\curvearrowright$ i till 7 A. M. cloudless afterwards.
21	132.0	...	N. & E.	Cloudless; also foggy at 9 P. M.
22	135.0	...	N.	Cloudless.
23	132.0	...	N. & W.	Cloudless.
24	...	...	N. & S.	Cloudless till 7 A. M. cloudy till 3 P. M. cloudless till 7 P. M. Scatd. $\curvearrowleft$ i afterwards.
25	...	...	<i>Sunday.</i>	Cloudless; also slightly foggy after 8 P. M.
26	132.0	...	N.	

$\curvearrowleft$ i Cirri,  $\curvearrowright$ i Cirro strati,  $\curvearrowleft$ i Cumuli,  $\curvearrowright$ i Cumulo strati,  $\curvearrowleft$ i Nimbi,  $\curvearrowright$ i Stratiformis,  $\curvearrowleft$ i Cirro cumuli.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
				Inches.
27	128.0	...	N. & W.	Cloudless; also slightly foggy between 7 & 10 P. M.
28	131.2	...	N.	Cloudless.
29	129.2	...	N. & N. W.	Cloudless.
30	132.8	...	N. & N. W.	Cloudless; also foggy after 7 P. M.
31	126.4	...	W. & N. & S. W.	Cloudless till 5 A. M. Scatd. clouds till 4 P. M. cloudless afterwards.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

## MONTHLY RESULTS.

			Inches
Mean height of the Barometer for the month,	..	..	30.043
Max. height of the Barometer oeeurred at 10 A. M. on the 26th,	..	..	30.189
Min. height of the Barometer oeeurred at 6 p. m. on the 13th,	..	..	29.919
<i>Extreme range</i> of the Barometer during the month,	..	..	0.270
Mean of the daily Max. Pressures,	..	..	30.121
Ditto ditto Min. ditto,	..	..	29.984
<i>Mean daily range</i> of the Barometer during the month,	..	..	0.137

			°
Mean Dry Bulb Thermometer for the month,	..	..	67.3
Max. Temperature oeeurred at 3 p. m. on the 2nd,	..	..	79.9
Min. Temperature oeeurred at 7 A. M. on the 13th,	..	..	54.8
<i>Extreme range</i> of the Temperature during the month,	..	..	25.1
Mean of the daily Max. Temperature,	..	..	76.5
Ditto ditto Min. ditto,	..	..	59.5
<i>Mean daily range</i> of the Temperature during the month,	..	..	17.0

			°
Mean Wet Bulb Thermometer for the month,	..	..	61.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer,..			6.1
Computed Mean Dew-point for the month,	..	..	56.3
Mean Dry Bulb Thermometer above computed Mean Dew-point, ..			11.0
			Inches
Mean Elastic force of Vapour for the month,..	..	..	0.462

			Troy grains
Mean Weight of Vapour for the month, ..	..	..	5.11
Additional Weight of Vapour required for complete saturation, ..	..	..	2.26
Mean degree of humidity for the month, complete saturation being unity,			0.69

			Inches
Drizzled 1 day, Max. fall of rain during 24 hours, ..	..	..	Nil.
Total amount of rain during the month, ..	..	..	Nil.
Prevailing direetion of the Wind, ..	..	..	N.

*Abstract of the Results of the Hourly Meteorological Observations  
taken at the Surveyor General's Office, Calcutta,  
in the month of January, 1863.*

MONTHLY RESULTS.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing, it rained.

Hour.	No. of days.												Missed.						
	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Cloud.	Rain on.	
Midnight.	19				1				2						1				3
1	20				1				3						1				
2	20				1				3						1				1
3	18				2				3						1				3
4	17				1				3						1				6
5	15				1				3						2				
6	20				1				2						2				
7	20				2				5						2				
8	14				4				6						2				
9	15				2				7						3				
10	15				3				4						2				
11	13				3				3						1				
Noon.																			
1	7				3				1						3				2
2	7				3				1						3				1
3	10				3				1						5				1
4	13				1				3						5				1
5	13				2				3						3				2
6	13				3				1						2				1
7	12				2				4						3				1
8	14				1				4						3				2
9	13				1				4						3				1
10	14				1				4						2				1
11	15				1				4						1				1
	16				1				3						1				



